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ART. I. *On the Pectic Acid of Braconnot, and its identity with Sclerotin, a peculiar principle existing in the Tuckahoe, or Indian Bread.* By JOHN TORREY, M.D. Professor of Chemistry and Botany in the University of New-York.

THE vegetable principle, called by Braconnot, Pectic Acid,* which is ascertained to form a constituent of many esculent and herbaceous plants, appears to be identical with a substance which I discovered some years since, in analyzing the Tuckahoe; a subterraneous fungus of the southern States.

In November 1819, I communicated to the Lyceum of Natural History, an account of this vegetable production, which was published in the New-York Medical Repository for December 1820. I will first repeat the principal part of this Memoir, and then compare the properties of Pectic Acid and Sclerotin.

The Tuckahoe was first described by Clayton, in the Flora Virginia of Gronovius.† In the second edition of that work (p. 176) it is called Lycoperdon solidum. From the time of Clayton, this vegetable does not appear to have been noticed

* *Ann. de Chim.* tom. xxviii. p. 173.

† Tubera terrae maxima, externe pulla et scabra, intus candida. Ad panem conficiendum Indi utuntur, vulgo Tuckahoo.

by any writer,* until Dr. Mitchill gave a short account of it in the Medical Repository.†

Barton, in his Collections,‡ mentions that the roots of the Smilax China [Pseudo-China] are used as food by the Southern Indians; but these could scarcely be confounded with the fungus in question.

In May, 1817, the late Dr. Macbride, of Charleston, S. C. communicated a memoir on this substance to the New-York Philosophical Society. This paper was never published, but an abstract of it is inserted in the first volume of the American Monthly Magazine.§

Though the Tuckahoe is quite common in the southern States, its natural history has been much neglected. Its name in the Indian language is said to designate *bread*, though it is applied to other edible roots. It is met with under ground, from two to three feet beneath the surface. Its form, for the most part, is globular, and its size varies from that of an acorn, to the bigness of a man's head. Sometimes it is found emerging from the ground, and exposing a small part of its surface. When first dug up, it is said to be soft enough to be easily cut with a knife, and of an acrid taste. Its colour internally is white, and its texture compact and homogeneous. It is covered with a tough external substance, strongly adhering to the parenchyma, of a dark brown colour, and much corrugated. When dried, it becomes hard and loses its acridity, but most of its other characters are retained. In this dried state, it has very little taste or smell, and may, without much difficulty, be reduced to powder.

When the Tuckahoe is examined by the microscope, it exhibits no traces of organization. No fibres or pores can be detected in it. It breaks as freely in one direction as another. These characters, with the peculiar nature of its bark, induce me to consider it as a cryptogamous plant of the fungus tribe.

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* Unless it be the Lycoperdon cervinum of *Walt. fl. Carolin.* p. 262.

† Vol. XV. p. 335. ‡ Part 1. p. 8.

§ Page 194. The paper was afterwards sent to the Linnæan Society of London, and printed in the 12th vol. of their Transactions, (pp. 388–391.)

In those parts of our country where the Tuckahoe abounds, it is generally supposed to be the root of the Convolvulus panduratus, called in this neighbourhood, *Man of the earth*; but Capt. Le Conte and Dr. Macbride, who have both examined the substance in its natural situation, observed nothing to favour such an opinion. Roots of the Convolvulus which I have examined, were altogether different from Tuckahoe. Capt. Le Conte informs me, that in some places at the south, it is believed to be the roots of the Dioscorea villosa; an opinion not more probable than the other.

Dr. Macbride, in the memoir alluded to, endeavoured to prove what Clayton first thought this substance to be—that it is a proper fungus, and not the root of any vegetable; and most of the botanists of the south are of the same opinion.

According to Mr. Rafinesque, this fungus belongs to an entirely new genus; and he thinks, that he has discovered its organs of reproduction, imbedded in the bark, in the form of buds. These, however, I have not been able to find.

Dr. Macbride has not given his opinion respecting the proper genus or species of this fungus; the principal object of his inquiries having been, to ascertain whether, as had been questioned, the substance was parasitic on the roots of plants, or whether it had an independent existence He was inclined to adopt the former opinion, in which he is supported by the observations of Capt. Le Conte. The fine specimens presented by Dr. Macbride to the New-York Philosophical Society, and now preserved in the Cabinet of the Lyceum of Natural History, seem to confirm this opinion, as some of them have the roots of plants running through, or adhering to them.

It would be difficult to assign a place among the Linnæan genera of fungi, for the species in question. It has been referred to Lycoperdon, and also to Tuber. To the former it bears no resemblance, and from the latter it differs in being destitute of seminiferous veins internally.

According to the system of Persoon, as contained in his Synopsis Fungorum, published in 1801, the Tuckahoe must be considered as a Sclerotium—a genus which is placed

among the *Angiocarpi*, or those fungi which bear seed internally. De Candolle, however, in a monograph of the genus which he published in the *Memoires du Museum d'Histoire Naturelle* of Paris, for 1816, has proved that the Sclerotium belongs to the *Gymnocarpi*, or those fungi which are furnished with external organs (*spori*) of reproduction. He places it among Elvella and Clavaria, though it is much more nearly allied to the latter.

Sixteen species of the genus are described in Persoon's Synopsis, and thirty in the Monograph of De Candolle, from all of which the Tuckahoe is perfectly distinct. I therefore propose it as a new species, under the name of *S. giganteum*, with the following diagnosis :—S. subterraneum, solitarium, subglobosum, intus album ; externe cortice corrugato suberoso nigrescente-spadiceo tectum.* It inhabits from Virginia to Florida, under ground.

Having determined the botanical characters of the Tuckahoe, I submitted some of the fungus to chemical analysis. I was particularly desirous of ascertaining, whether the opinion of Dr. Macbride, that it consisted chiefly of a modification of gluten, was well founded.

I. The first experiment which I made on the substance was to try the effect of boiling water upon it *in mass*. Pieces of

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* I was not aware, until several years after my paper on the Tuckahoe was published, that my excellent friend, the Reverend Mr. Schweinitz had also described this vegetable, and had, likewise, referred it to the genus Sclerotium. This distinguished mycologist has noticed it under the name of S. Cocos, in a descriptive catalogue of the fungi of North Carolina, which was published in the *Comm. Soc. Nat. Curios. Lips.* 1820.

In the recent elaborate Systema Mycologicum of Fries, the S. Cocos and two kindred species are constituted into a distinct genus, under the name of Pachyma. These fungi were separated from the other Sclerotii, chiefly on account of their *habitus*, for Fries acknowledges that the fructification is unknown. This learned botanist has, however, fallen into a mistake respecting the prominent character of his new genus. The name Pachyma, alludes to the supposed thick skin of S. Cocos, which is the type of the genus, and by a typographical error in Mr. Schweinitz's catalogue (p. 31) is described as being "*unciam* crassus" instead of *lineam*. Vid. Fries' Syst. Mycolog. ii. p. 242.

the size of a walnut swelled a little, but did not soften much in three hours boiling. They were then shaved very fine, and boiled again for seven hours. The fungus swelled more, and became translucent, but it did not break down into a pulp, nor did the shavings adhere together. The same was set aside, covered with water, and kept at a temperature varying from 45° to 70°. In a week it became covered with mouldiness, but at the end of seven weeks, no fermentation had taken place, nor had the mass become sour.

II. Some of the substance was reduced to a fine flour, and kneaded with leaven. The mass had not the least ductility, and though kept near a stove six weeks, showed no signs of fermentation.

These experiments are sufficient to prove that it cannot be gluten, for that substance, besides its other remarkable properties, putrefies very soon, when kept moist.

III. A portion of powdered Sclerotium was triturated in a mortar with cold water. The powder did not adhere, but it swelled a little. When the liquor was filtered off, it had a slight opaline appearance. It was then reduced to a small quantity by evaporation, and applied to slips of paper like paste, but without making them adhere.

IV. Some of the powder (120 grains) with a sufficient quantity of water, was introduced into a retort, and a receiver attached. When half the quantity of water was distilled over, it was removed for examination. It was colourless and nearly transparent, and had a peculiar, but not strong smell, a little resembling mushrooms. Various re-agents applied to it detected no foreign substance; therefore little of consequence came over in distillation.

V. The liquor remaining in the retort was filtered *while yet hot*, that any gluten or starch it contained might not be deposited; as these substances are insoluble in cold water: but the fluid, when cold, let fall very little sediment.

*a*. Alcohol poured into it did not affect its transparency, except when much concentrated; it then threw down a small quantity of a tough substance.

*b*. Acids produced no effect.

*c.* Vegetable blues were not altered.

*d.* Solution of alum, or nitrate of silver, produced no effect.

*f.* Neither did the acetate of lead.

*h.* It could not be used as paste.

When evaporated to dryness, it left (2 grains) of a sweet brownish substance, which refused to crystallize, and burned with the calomel smell.

VI. The next menstruum used, was alcohol. It was digested a few hours on the Sclerotium, and strained while hot, through blotting paper: what passed through was colourless and transparent. When much concentrated by evaporation, it assumed the appearance of a jelly: this, when entirely dried, was of a horn-like texture, though brittle; and it was soluble in alcohol, but not in water. It weighed 1½ grain.

VII. Ether was digested on some of the powder a considerable time, but it produced little effect.

Finding that neither hot nor cold water, alcohol, nor ether, exerted much action on the Sclerotium, I tried the effect of alkalies.

VIII. A weak solution of potassa softened the powder, and when heated, effected a complete solution, of a brown colour, and the consistence of syrup. To this solution the following re-agents were applied:

*a.* Muriatic acid instantly converted it into a colourless jelly, even when diluted with six times its weight of water.

*b.* All the mineral and vegetable acids produced a similar effect.

*c.* Likewise a solution of alum.

*d.* Infusion of gallnuts produced a thick brown jelly.

*e.* Muriate, oxalate, and nitrate of ammonia being added to the alkaline solution, formed the jelly, but they were decomposed. The liberated ammonia was manifested by the smell and by the cloud which formed when muriatic acid was brought near it.

*f.* Nitrate of silver, the acetates of zinc and lead, neutral carb. potassa, sulphate of potassa, and several other salts, gelatinized it.

*g.* Muriate of soda did not produce the effect till the following day.

*h.* Alcohol instantly separated an elastic fibrous substance, which collected on the spatula, and much resembled the *fibrin* of blood. It became semitransparent and brittle on drying, and then was re-soluble in alkali.

*i.* Carbonic acid gas, passed through it, produced a jelly.

*k.* Also a current of chlorine.

IX. Caustic soda dissolved Sclerotium, and the solution was affected by tests, much like that of potassa.

X. Ammonia dissolves Sclerotium, but not so readily as the fixed alkalies, and the solution is colourless. When heated, the ammonia is disengaged, and the substance is left behind, unaltered in its chemical properties. In this way it may be spread over any surface by means of a brush. It will cause papers to adhere when applied as paste.

XI. The effects of acids on the substance of the Sclerotium were not less remarkable than those of alkalies.

When some of it in powder is thrown into warm nitric acid, a violent action soon takes place; much nitrous gas is liberated, and the powder is entirely dissolved. When the whole is boiled for some hours,—the acid being supplied as fast as it evaporates, crystals form in the solution when it is set at rest. These are crystals of oxalic acid, as is proved by the abundant and instantaneous precipitate which falls when calcareous salts are added. A portion of the *artificial* bitter principle is also formed.

XII. The sulphuric acid when concentrated, decomposes the Sclerotium, and some of the *artificial tannin* of Hatchett is formed.

XIII. The same acid, when diluted, dissolves it by the application of heat, without decomposition, and the solution is of a yellow colour. When this acid solution was saturated with an alkali, the substance of the Sclerotium fell down, but considerably altered in many of its properties. Red sulphate of iron did not discolour it, showing that no tannin was formed.

XIV. The muriatic acid dissolved but a small quantity of Sclerotium.

XV. Some of the substance in fine powder was kept suspended in water by agitation, while a current of chlorine gas was passed through it; but this agent had little more effect than making it very white.

XVI. It now remained to examine the substance by destructive distillation. A quantity of it in large fragments was introduced into a green glass retort, previously coated with clay. The vessel was exposed to a naked fire, which was gradually increased. A quantity of pure water first came over, then a thick yellowish smoke, which gradually condensed into an amber-coloured liquid. Much gas was also evolved, which was collected by the pneumatic apparatus. When examined, it was found to be carbonic acid, carbonic oxide, and carburetted hydrogen. The liquid in the receiver had a penetrating empyreumatic odour, a disagreeable acid taste, and it effervesced with alkaline carbonates. Some of it, saturated with potassa, did not give out any smell of ammonia, and when treated with sulphuric acid, evolved vapours of acetic acid. It appears, therefore, that the distilled liqour is vinegar, combined with empyreumatic oil, or what was formerly called *pyroligneous acid*.

The charcoal in the retort was small in quantity, and appeared as if it had undergone fusion, the fragments having all united into one mass. This charcoal incinerated in a platina crucible, yielded ashes which contained no alkali, but effervesced with acids, and appeared to consist in great part of carbonate of lime.

From the foregoing experiments it will be seen, that the Tuckahoe or Sclerotium is a remarkable substance, and very different from what it has heretofore been considered. It is abundantly proved not to be *gluten*, a modification of which substance Dr. Macbride supposed was its principal ingredient; others believed it to contain a large quantity of *starch*—but my experiments detected none. It certainly consists almost entirely of *one substance*, or that which is left when alcohol and water have taken up all they are capable of dissolving.

In comparing its characters with those of the numerous secondary principles of vegetables, described in the latest chemical works, it will be found to differ from them all. It evidently belongs to the same class with fungin, medullin, lignin, and other inert ingredients of plants. It is, however, somewhat allied to fungin, though quite a distinct principle. As it differs from every other hitherto described, it must be considered as a new species, and may be called SCLEROTIN. Its properties have been sufficiently detailed in the course of the experiments.

Since I read the Memoir of Braconnot, I have repeated my experiments on the Sclerotin and have no doubt of its identity with pectic acid. I cannot, however, distinguish in it any acid properties when it is perfectly pure. It appears to me, that the property of reddening vegetable blues, observed in it by Braconnot, was owing to a portion of the acid which he employed for its coagulation being entangled in the jelly. When muriatic acid was added to the solution of Sclerotin, I found it impossible to remove the excess of this substance by the most copious washing, even with potassa; so completely was it enveloped in the gelatinous mass. The alkali, also, used to dissolve the Tuckahoe, cannot be washed from the jelly.

What are described as salts of pectic acid by Braconnot, I suspect are only mixtures of the Sclerotin with the alkali employed to dissolve it, and which was entangled in the substance when the jelly was formed.

The pectic acid, in every essential character, resembles the principle which I found in the Tuckahoe.

Like the Sclerotin, it is insoluble in cold water; but it is taken up in small quantities by hot water. Both principles are dissolved in large quantities by alkalies, and their solutions are gelatinized, even when very dilute, by alcohol, acids, neutral salts, and both, by the action of nitric acid, yield crystals of oxalic acid.

Braconnot proposed to make a useful application of the pectic acid. He ascertained that a small quantity of the

substance, in combination with potassa, would cause a large quantity of sugared water to gelatinize by the addition of an acid. In this way he prepared aromatic jellies, perfectly transparent and colourless, and very agreeable to the taste and sight. Rose-water, coloured with cochineal, and sweetened, forms the basis of an exquisite jelly.

It is a very remarkable circumstance, that an entire vegetable, in a dried state, should consist almost exclusively of one proximate principle. Yet such appears to be the nature of the Tuckahoe, for it can lose nothing of consequence but water, during the process of exsiccation.

As this production is abundant in some part of our country, it is probable that hereafter it will be much employed in confectionary.

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ART. II. *A Case of Hydrocephalus Internus, with Remarks on the Operation of Paracentesis Cerebri.* By CHARLES ALFRED LEE, M.D. one of the Physicians to the Northern Dispensary of New-York.

HYDROCEPHALUS internus is generally and justly ranked among the opprobria medicorum, and from Hippocrates, who scarcely left a remedy untried, to our own day when nothing is done, it has appealed in vain to the skill of the physician and the resources of our art. The idea that it is incurable seems widely prevalent, and it is to be feared prevents many from resorting to such means as would promise success, or at least mitigate the sufferings and prolong the life of the patient. That an effusion of fluid, within the cranium is a more serious evil, and of a more dangerous character, than such accumulations in any other part of the system, is obvious and self-evident, from the very structure and function of the part affected; but that it should necessarily and uniformly prove fatal, we are not so ready to grant. Indeed, we conceive that practitioner to be highly culpable, who, when called to cases of this nature, either leaves his patient to die, or administers some inert *placebo* to allay the fears, or gratify the wishes of the friends, without resorting to those prompt

and decisive measures which the nature of the disease and the urgency of the case demand.

The above remarks have been suggested by witnessing the fatality of this disease, and by one case in particular, which fell under my care during the past summer; a history of which is here given with the hope that it will not prove altogether uninteresting.

A. B. born of healthy parents, soon after birth showed symptoms of hydrocephalus. The head was rather hotter than natural, and the pulsation of the carotids showed a preternatural determination of blood to the brain. Still the child nursed well, had natural evacuations from the bowels, and, except for the rapid growth of the head and watchfulness at night, would have been pronounced healthy. The gradual widening, however, of the sutures, the fluctuation within, the obliquity of the sight, and an aversion to light, soon showed, too plainly to be mistaken, the nature of the disease. At the age of two months, the head had so much increased in size, that tapping was proposed to evacuate the water, but consent could not be obtained. Nothing was done by way of general treatment, except an attention to the state of the bowels, which were regulated by small doses of castor oil and calc. magnesia. At the age of three months, the head became so unwieldy by its size, and no chance of recovery remaining, except by evacuating the water, however small that might appear, consent was finally granted. The dimensions of the head, as taken at this time, were the following:

Fronti-occipital circumference, 27 inches; lateral circumference, 26 inches; from ear to ear, over the vertex, 15 inches; from the chin to the vertex, 11 inches, while from the same to the inner canthus of the eyes measured but 2½ inches. The sutures, of course, were all widely separated, and the posterior part of the sagittal was more than six inches in width. The bones were all loose and detached; the frontal bone, in particular, was separated from the nasal and malar, and divided into two equal portions. The water thus having a free passage to the inner angle of the eyes, through the fronti-nasal

suture, turned the eyes out, so that the two *axes of vision* formed an angle of near ninety degrees.

I performed the operation with a common scalpel and grooved director, making the puncture at the superior anterior corner of the right parietal bone. About eight ounces of water were drawn off, coloured somewhat with blood from the incision; the collapse of the integuments being so great, it was not considered expedient to take away more at once. The puncture was secured as well as possible, by compress and adhesive straps, but these were retained with difficulty, from the pressure occasioned by the crying of the child. The next morning I was sent for in haste, and found that the water had been dribbling away during the night, so that the pillow and clothes in the cradle were thoroughly wet, in consequence of which the child was nearly exhausted.

A suture was now taken, and other straps of adhesive plaster applied; and though, as near as I could calculate, more than a quart of water had been discharged during the night, the oozing still continued. Some wine and nourishment were directed, with an anodyne to procure rest, and light and noise excluded as much as possible. The operation was performed on the 5th of September. On the 7th the wound united, and the bandage was tightened. It was my design to repeat the operation every few days, taking away a small quantity at a time, until the whole should be evacuated; but the accidental loss of so much fluid at once, defeated the plan, by reducing the patient to a dangerous degree of debility. The principal and indeed only indication now seemed to be, to support life and strengthen the vital actions, until the child should be so far restored as to be able to sustain a repetition of the operation.

Sept. 8th. Found my patient labouring under re-action—hot, restless, with dry skin, tongue furred, with a small, weak pulse, and upwards of 200 in a minute. Within the preceding twenty-four hours much larger quantities of urine than natural had been passed, and the head diminished in size so rapidly as to require the bandage to be tightened twice during the day. This continued for several successive days, during

which the bowels were kept open by small doses of ol. ric. and other mild laxatives.

Sept. 17th—twelve days after the operation. Child nurses tolerably well, and seems pretty free from pain—sleeps better in the day-time than at night—fever slight—countenance brighter—less strabismus—tongue clean—head much smaller—urine continues to flow largely. On the day following, for the first time since coming under my care, the child was able to turn its head slightly upon the shoulders. From the 17th to the 25th of September, nothing occurred worthy of particular notice—the urine was diminished to nearly the usual quantity, and the size of the head appeared stationary. The head had thus far been daily growing smaller, and the hope was entertained that the water might eventually all be discharged, without resorting to a second operation; but on visiting my patient on the 26th, I found the bandage evidently tightened, and every sign of a re-accumulation of the fluid. From this time until the 8th of the following month, the head gradually increased in size—body emaciated—pupils of the eyes dilated—child refused the breast, and seemed to suffer much pain. The dimensions of the head were as follows:

Lateral circumference, 7 inches.

Fronti-occipital circumference, 22 inches.

From the tight bandaging, the longitudinal diameter of the head (if I may so call it) was much lengthened, while the lateral was nearly natural.

On the 8th October, I made a puncture at nearly an equal distance between the parietal and frontal bones, on the right side, and drew off about fourteen ounces of water. The integuments were again firmly supported by a double-headed roller, and as the pressure from within was less, and the opening smaller than in the former operation, there was no dribbling from the wound. From this period until death, which happened on the 28th October, the child grew worse—took but little nourishment—when not screaming, lay comatose, and seemed insensible to light and sound—body gradually emaciated, and every symptom indicated the fatal termination which was to follow.

*Dissection.*—The vessels of the scalp and pericranium were much enlarged, and on cutting through the dura-mater, on the right side, about half a pint of fluid of a deep yellow colour escaped. The dura-mater adhered firmly to the bones of the cranium, and the water that was discharged was collected between that membrane and the pia-mater. Both these membranes were actually disorganized, and exhibited the strongest marks of inflammation I have ever witnessed. There were large collections of pus and coagulating lymph lodged on the inner side of the temporal, occipital, and parietal bones, as well as at the base of the skull. Shreds of an adventitious fibrinous membrane were also found floating in the water, and adhesions in various places.

The brain was a mere pulpy sac, from half an inch to an inch and a half in thickness, and containing three pints of clear water. No marks of organization were left, and, to use a comparison of Golis, who describes several cases very similar to this, the brain resembled a foot-ball, lined with a membranous sac, constructed of a preternatural membrane and filled with fluid. The whole was of much softer consistence than natural, and of a dead white colour, like the substance of the nerves. In short, the brain was reduced to a homogeneous pulpy mass, with scarcely a trace remaining of the parts usually found in cerebral dissections. The cerebellum remained unaltered, though the dura-mater, which covers it, was lined with effusions of lymph and purulent matter. The spinal marrow also exhibited no morbid appearances.

The thoracic and abdominal viscera were examined, but nothing worth noticing was observed, except, perhaps, a preternatural fulness of the gall bladder.*

Respecting the operation of paracentesis cerebri, there seems to be a difference of opinion among medical men; some be-

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* The above were all the appearances worthy of notice, except the remarkable thinness of the bones of the cranium. The texture of the bones was firm, yet as thin and transparent as oiled writing paper. Though dense, they could be cut with difficulty, like thickened and indurated cartilage.

lieving it to afford little or no prospect of relief; while others, as strongly recommend it as being the surest, safest, and speediest method of alleviating, if not permanently curing this formidable disease. Of course, we speak here of the chronic form of hydrocephalus; as to its expediency in the acute stage, we shall remark hereafter.

That the disease, when fully formed, will not yield to the ordinary modes of treatment,* and that the water cannot be evacuated, except by an operation, seems generally allowed; the only question, then, would appear to be, whether re-accumulation of the fluid can be prevented? We are happy that facts enable us to answer this question in the affirmative. In the 9th vol. of the Medico-Chirurgical Transactions, a case is given by Dr. Vose of Liverpool, where, though the dimensions of the head nearly corresponded with those of my patient, the operation was crowned with complete success. In this instance, a couching needle was used, and about four ounces of water evacuated at a time, at several different periods, until the whole was discharged, and the child was restored to perfect health. The water in this case, it may be said, was contained wholly between the membranes, or between the membranes and the skull, constituting what some denominate the external form of the disease, and that the operation would have proved unsuccessful had the ventricles also been filled. Whether it was or not, we have no certain means, perhaps, of judging; but even granting that it was, this would only be an additional argument in favour of the operation; for, if the cerebral organization is unaffected, we have certainly strong reasons to augur a favourable result. This can only be as-

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* It is remarked by Bichat, that the lateral ventricles are lined with a production of the *tunica arachnoides*, which he judges to be a serous membrane. The water, however, which was discharged in the above case, did not coagulate by heat or acids, or show the other chemical qualities of that which, in inflammations, is usually poured out from such membranes. Why is it that the fluid effused between the membranes in meningic inflammation of the head, or *sthenic* hydrocephalus externus, often also contains no albumen?

certained in the living subject by actual trial. Supposing, however, that the internal part of the brain is likewise involved in the disease, it becomes an interesting inquiry, whether the same operation holds forth any rational hope of success? If the process of disorganization has not commenced, and the structure of the brain remains materially unchanged, we see no reason why it does not promise as much permanent benefit as in ascites or hydrothorax. In both cases there is a probability of a re-accumulation of fluid; but that each is equally within the reach of remedial agents, we see no good reason to doubt. It is important, however, in cases of hydrocephalus to evacuate the water at an early stage of the disease, otherwise the chances of success are truly small, and the intellect becomes irremediably impaired, even if it be the means of preserving the life of the patient. As to the place of performing the operation, we should be guided by the degree of fluctuation, the state of the sutures, &c. Between the parietal and frontal bones, on the lateral part of the head, will generally be the safest place to operate; for if the opening be made between the temporal and parietal bones, there is a possibility of wounding either the temporal or the meningic branches of the external carotid artery. A scalpel, lancet, and grooved director, can be used, or what is still better, the trochar and canula; and if there should be an oozing from the wound, it will do no great injury, uuless it become excessive, when it induces a dangerous degree of exhaustion. As to the *time* of operating, as a general rule, it should be done as soon as the fluctuation indicates effusion, and repeated at an interval of a few days, until all the fluid is evacuated. Of course, we are to be guided by the age, strength, general health of the patient, duration of the disease, &c.—circumstances which always modify our treatment, and cause exceptions to the general rules of the *methodus medendi.*

As to the degree of compression which should be used, after the evacuation of the water, we are to be governed by the previous history and present circumstances of the case. That a due degree of pressure would tend to stimulate the *absorbents* (that there are such in the brain I take for granted, though

they cannot be demonstrated,) is highly probable ; but we are also to take into consideration the danger of disorganization, for by confining the cranial parietes, the pressure of the contained fluid is wholly exerted upon the soft cerebral contents; thus breaking down the substance of the brain, and converting it into a disorganized homogeneous mass. We are also to bear in mind the fact above mentioned, that a sudden removal of the water takes off the stimulus of distention, which would be followed by fatal sensorial exhaustion, were we not by bandaging to afford support to the collapsed integuments. We, therefore, come to the conclusion, that a moderate degree of compression is necessary, but that a greater degree would lead unavoidably to a fatal result.

Respecting the means of preventing the re-accumulation of the water, we should be governed by the same general principles as guide our treatment in cases of ascites and hydrothorax. If the water is collected between the membranes of the brain, blisters and other local stimulants, such as the preparations of ammonia, will prove highly efficacious in exciting the action of the absorbents, and thus removing the effused fluid ; but if the water should be contained within the ventricles, then external irritation will only aggravate the disease. If there are symptoms of cerebral congestion, or inordinate determination of blood to the head, we should pursue a moderately antiphlogistic treatment, and endeavour to restore the balance of the circulation, by semicupia, blisters, and sinapisms to the lower extremities, with occasional cathartics of an active kind. If the absorbent system seems principally in fault, the ordinary diuretics should then be administered—particularly small doses of calomel. This course steadily persevered in, with a prompt evacuation of the water, as often as it accumulates, it is believed, furnishes the most rational hope of curing this serious and obstinate malady.

With respect to the propriety of an operation in the acute*

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* It is curious to note the discrepancies of opinion among medical writers with respect to the symptoms and treatment of hydrocephalus acutus. While some seem to be ignorant of the fact, that the brain is affected by

form of hydrocephalus, we should not be, perhaps, justified in speaking very confidently of success. We should not, however, too hastily reject an operation, which comes to us recommended by Hippocrates, Forestus, Severinus, and Le Cat; nor, on the other hand, rashly adopt the same, when we find it censured by Morgagni, Fabricius, Hildanus, and Flajani. Here we are to bear in mind, that not only *serum* but coagulable lymph is effused within the cranium; in proof of which Golis mentions, that in one hundred and eighty cases, which he examined, he found lymph *in every instance* lining the ventricles and upper surface of the brain. Besides, there is reason to fear that the structure of the brain is irretrievably deranged by the inflammatory process, and that even should the water be evacuated, the result would, nevertheless, prove fatal.

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all causes of intestinal irritation, and thus find hydrocephalus in every disorder of the bowels; others impute every affection of the head to sympathy, and, in fact, deny the very existence of this disease as idiopathic; but the truth lies in the middle—

——————————Sunt certi denique fines
Quos ultra, citra que, nequit, consistere rectum.

Shall we, because a child cries, and squints, and rolls its head, and shows an aversion to light and noise, and has green slimy evacuations from the bowels, and dilatation of the pupils, pronounce it dropsy in the head, and proceed forthwith to open the temporal arteries, and blister the scalp, and "throw in" the calomel, and croton oil, and spirits of turpentine; and, if the child is so fortunate as to escape, draw up an elaborate history of the case, to show the public how to cure (*secundum artem*) this incurable disease? The following extract from the work of Hippocrates, "De Morbis," lib. vii. sec. v. shows very clearly that he understood the symptoms and nature of hydrocephalus quite as well as Golis, Cheyne, Beddoes, Darwin, or Whytt. "Aqua si in cerebro suborta fuerit, dolor acutus sinciput et tempora interdum que alias capitis partes detinet, subinde que rigor et febris, oculorum regiones dolor occupat, iique caligant; pupilla scinditur, et ex uno duo sibi cernere homines videntur, et siquis surrexit tenebræ ipsum prehendunt, neque ventum, neque solem sustinent, aures tinniunt, salivam et pituitam vomitione refundit, quando que cibos," &c.

ART. III. *Remarks on the Human Teeth.* By J. TRENOR, M.D. of New-York, Dentist.

THE object in making the following remarks is partly from a belief, that they give a new view of the subject to which they relate; but chiefly with the hope of exciting investigation and inquiry upon a point of much practical utility. That writers, up to the present day, are divided in their opinions, might be a sufficient inducement for entering upon this examination; but when we see, in the very latest productions, false theories advanced, and most injurious practices thereupon recommended and pursued, it becomes a duty to show the defects of such doctrines; and for doing which, no apology of course will be required.

I shall consider this subject under three heads: first, on the formation and structure of the teeth; secondly, on their organization; and thirdly, on their nourishment.

The first rudiments of the teeth are visible as early as the second or third month of the fœtus, and exhibit small soft pulpy masses, arranged in a depression or groove on the upper and outer circumference of the jaw bone (taking the inferior maxillary for example,) and connected by their upper surfaces to the lower surface of the gum which lays over them. Those pulps being very vascular and otherwise highly organized, gradually enlarge to about the size, and assume the form, of the body or crown of the future tooth. At a more advanced period, those pulps are obviously enclosed in membranous sacs; each sac being connected superiorly to the gum from which it receives its vessels, and from which it may be injected. The pulp lies loosely within its sac, to which it is connected only at its base, where the nerves and vessels may be perceived entering the pulp. The enveloping membrane, or sac, does not appear to be injected from the vessels going to the pulp; but, as before stated, from those which enter it from the gum. The bone of a tooth is formed upon the pulp; the enamel seems to be derived from the en-

veloping membrane. Ossification generally begins from two or three points on the incisores, and from two to five on the double-teeth; on the canine, from one point. In the teeth this process is evidently different from that by which the round or flat bones are formed. When ossification is about to commence in the former, the vessels in the centre of the cartilage which at first occupies the place of bone in those that are of a cylindrical shape, those vessels, I say, enlarge and admit red blood, from which the principle of bone is separated; and as the bony matter increases, the cartilage is absorbed; so that, in these cases, it will be perceived, that bone is formed from the centre towards the circumference. Flat bones are formed between membranes; ossification proceeding in rays from numerous points of commencement. As respects this process in the teeth, we may regard the pulps from which they are formed as occupying the same place, in reference to them, that cartilage does in reference to other bones. But in the teeth ossific matter is secreted on the external surface of the pulp, and proceeds towards the centre. It first appears in that direction in which the tooth passes through the gum; then spreads round the edges, and, having progressed somewhat, presents the appearance of a cap to the pulp. The enamel now begins to be deposited on this bony cap, at first being soft and chalky; and these two processes, the formation of bone and enamel, proceed: the deposition of bone being the more advanced of the two, until the crown of the tooth is entirely formed. Here it is, that the enveloping membrane unites to the base of the crown of the tooth, and its office of furnishing the enamel ceases, at the same time that the root of the tooth beginning to be developed, the tooth must necessarily rise in its socket. This brings the enamelled surface into contact with its enveloping membrane, on which it acts as a foreign substance, causing it to be absorbed; and in the same manner it influences every other opposing matter, until the whole of the enamelled surface has passed through the gum.

In a former paper, *on the teething of infants*, I have endeavoured, and I hope successfully, to establish the point, that

the enamel must be viewed, to all intents and purposes, in the light of a foreign substance, as respects the organized parts of the system, inasmuch as it is never found united to the soft parts by which it is surrounded. When the point of a tooth has emerged from the gum, a probe may be passed under the gum and all round the enamelled surface of that tooth, without any laceration whatever of the soft parts. It not unfrequently occurs, that one or more of the dens sapientiæ is partially, and sometimes almost entirely, covered by the gum; and this too for years, from want of room to come fully out; yet the same operation of passing a probe all round the enamelled surface of the tooth and under the gum, without hindrance from, or injury to, or any inconvenience whatever, to the surrounding soft parts, may readily and at all times be done.

The formation, therefore, and gradual elongation of the root, is a necessary cause of a protrusion of the crown in an opposite direction, bringing the enamel in contact with parts capable of being, and which are consequently, absorbed; and the tooth will continue to rise, if uncontrolled from want of room, until all that which is enamelled has passed out of the socket and beyond the gum. If a tooth be taken out just at this period, the whole of the root, as to length, will be found completed, although it will be yet considerably open at the point. Every practitioner may have repeated opportunities of testing the truth of this observation, in the necessary removal of teeth for the purpose of remedying irregularities in their arrangement. It has been stated, that ossification of the teeth differs from that process in other bones, in commencing at the circumference, and proceeding towards the centre. It also differs in a much more essential particular: it will be recollected, that where bone is about to form for the purpose of occupying the place of cartilage, the central vessels in the latter, which, as belonging to cartilage, convey a colourless fluid, enlarge considerably and receive the red blood, from which is separated the elements for the formation of bone. But in the pulps ossification does not commence in their centre, but on their external surfaces; nor do we see the vessels

on their circumference enlarge and admit red blood, while the deposition of bone is taking place; on the contrary, the vessels which ramify over the surface of the pulp evidently convey a colourless fluid, the bone of the tooth being an exudation from the surface of the pulp, and which gradually becomes hard.

In M. J. Cloquet's beautiful "Anatomie Descriptive," in treating of the teeth, we find the following passage: "L'ossification des dents, est-elle due à une production organique, ou bien n'est-elle qu'une sorte d'exsudation calcaire analogue à celle qui forme les enveloppes des crustacés? Cette question n'est point encore résolue, et divise les anatomistes les plus célèbres."

From the view we have given of the manner in which the vessels of the pulp are disposed, it will be perceived that we incline to the latter of the two opinions, and the correctness of the statement we have made may be readily tested in the following manner:—Let a tooth, which is perfectly sound, be laid open vertically, as soon as removed from the mouth, but so cautiously as not to wound or lacerate the pulp. If the latter be carefully separated from the internal cavity of the tooth to which it adheres with a slight degree of tenacity, its whole surface will present a smooth shining whitish appearance, but without any evidence that the vessels of the surface convey red blood. Opportunities for such examinations frequently occur in extracting sound teeth in cases where they are too much crowded. If, on the other hand, we expose the pulp of a tooth, immediately after its removal from the mouth, in which acute tooth-ache of a few hours' duration, just previous to its being extracted, had been experienced, we shall see the vessels of the surface freely injected with red blood, and their branches ramifying in different directions. Such opportunities of investigation are still more frequently met with than the former, in cases of decayed teeth in which the disease has progressed to the central cavity of the tooth. In these last instances, the irritation of the pulp having brought on inflammation, vessels, which in a healthy state receive a colourless fluid, now admit red blood, precisely as we

see in high grades of inflammation in the coats of the eye, villous coat of the stomach, &c. &c. Again, in removing decay, which has extended deep into the body of the tooth, it sometimes happens that the soft parts in the central cavity of the tooth become exposed. If the operation is done cautiously, so as not to wound this delicate texture, we have often an opportunity of examining the pulp in situ naturale, when it presents an appearance as if an opake membrane veiled from your view the series of vessels in which red blood circulated, a florid hue being visible through this membrane.

The inference to be drawn from this, is, that the vessels which cover the surface of the pulp, separate from the arterial blood the principles necessary for the formation of the bone of the tooth, and which exudes from them on the surface of the pulp, adhering to the last formed layer of bone, where it gradually hardens, while its more fluid parts are taken up by the absorbents. In this way, layer after layer of bony matter is thrown out, until the teeth attain that degree of strength and solidity, which the nature of their functions require. The foregoing remarks are equally applicable to the formation of the second, as well as the first set of teeth. Intimately connected with the development of the teeth, are their sockets; and, therefore, a few words in reference to them may, without impropriety, be introduced in this place.

If we examine the jaw of a subject, at any time from shortly after its birth until about the fourteenth year, we shall find some one or more teeth whose bodies are entirely developed, but whose bony socket, or enclosure, has not yet began to be absorbed; or in which this process has but just commenced at its upper part, for the purpose of permitting the tooth to pass out. It is in this bony socket, also, is contained the root or roots of that tooth, after the body or crown leaves it, to take its permanent situation above the gum. If we compare the length of that portion of the tooth usually found completed, as absorption of the superior part of the socket is taking place, we shall find it fully equal to that of its root or roots; consequently, the bony enclosure which the body of the tooth has vacated, will have quite sufficient

depth to contain its root or roots. In other words, the length of that portion of a tooth which projects beyond the bony socket, is fully equal to that contained within the socket. From this it is plain, the sockets of both first and second set of teeth are formed, rather before the body of the teeth are completed, and that the only essential change they undergo is, to contract a little upon the root, and form septems to such teeth as have more than one root. It is also to be observed, that as the sockets of the permanent teeth are first very much crowded, they become regular in proportion as the circle of the jaw enlarges.

Of the numerous topics which properly come within the scope of a work on Dentistry, few seem to have been examined with less regard to sound reasoning and practical observation, than that which relates to the organization of the teeth. Authors generally assert, that the teeth are as highly organized as any other portion of the human structure. Some even assert, that they take the lead in this particular; but the most moderate consider them at least entitled to be ranked with other bones of the frame, and in proof of this, bring forward innumerable instances of acute pain, inflammation, and swelling, which are constantly met within them, and the parts to which they are attached. In addition to which, Hunter's experiment of transplanting a tooth into the cock's comb, as well as from one human mouth to another, and its there adhering, is brought forward as conclusive evidence on this point. That the teeth are not inorganic is undeniable; otherwise, they would not remain in their sockets; but that they are not very highly organized, I think can be easily shown. It might be well, first, to give something of a definite meaning to the term organization, for the purpose of having a fixed point from which to start. With this view, it will be sufficient to observe, that it may be considered the principle of animate matter, possessing the power of resisting to a certain extent, decomposing agents, and the ability of repairing injuries it cannot resist. Whatever part or parts of our frame possess those properties, in their fullest extent, may, with fairness, be considered the most highly organized.

It is not necessary that I should digress so far from my subject, as to point out the different tissues in which the various grades of organization are to be met with. It is sufficient, that I confine myself to the teeth, and with this general observation, that the scale of organization decreases as density of structure increases. I shall go on to show, that the rank in which they are entitled to be placed, is the very lowest—that is, that they possess the combined properties of organized matter in a less degree, than any other portions of our structure. That this is the case, may be proved by contrasting them with any or all of the various materials of which the human frame is composed.

The first point of comparison shall be their respective abilities for repairing what may have been imperfectly formed. It is well known, that from some defect in the original structure of parts, they do not answer the purposes for which they were intended ; and that in such cases they are removed, and new matter generated, as in scrofulous subjects, in whom portions of the bones of the extremities particularly, are cast off, and their loss supplied by new and more perfect materials—but in the teeth this is not the case. Parts of teeth imperfectly generated, retain that imperfect state until the teeth pass out from the gums, when those parts, not being capable of resisting decomposition, are soon removed by the combined chemical operations of food and saliva, and the mechanical functions of the teeth. It is by no means uncommon to meet with teeth, more particularly the molares, one or two points of which have just made their way through the gum, when, on examination, it is found that a probe may easily be passed some distance into the body of the tooth, through a soft substance, which, on being removed, has the appearance and consistence of chalk. I have even found this defect situated on that part of the tooth from which the gum had not yet receded. When such a tooth passes fully from beneath the gum, this soft chalky matter very soon becomes discoloured by food and saliva, and is gradually forced out by hard substances, being pressed into the cavity in masticating. This then becomes a receptacle where food and saliva lodge, and

by their chemical action, which, in some persons, is inconceivably powerful, constantly go on softening the bone of the tooth, by which the enamel becomes deprived of its solid support, and is broken away from time to time, in chewing, until the whole crown of the tooth is in this manner destroyed. Were the teeth as highly organized as other bones, they would, like them, throw off this imperfectly formed part, and re-form new and solid matter in its place, before the tooth had passed out from the gum; but such a process is not accomplished, even afterwards.

In the second point of comparison, we will suppose a tooth to have passed out of the gum, in a perfectly healthy, sound, and solid state, and that by some accident this tooth becomes fractured in any of its parts, or to any extent, does such a fracture ever unite? or is there any effort, on the part of nature, to a reparation, as is always the case in other bones? If nothing of the kind takes place, and it most certainly does not, it must be from a deficiency of organization to accomplish the process.

I have here compared the teeth only to other bones, because, if the latter appear higher in the grade of organization, it would be useless to carry on the comparison with the muscular tissues, or those of similar character. We will next examine what takes place in a tooth in which decay has commenced, no matter from what cause. Is there any tendency here in what is sound to separate from what is defective, as there is in all other parts of our system? Not the slightest. Common as is decay in teeth, the process by which other parts would get rid of such dead or disorganized matter, is never seen to take place in them; much less are they capable of regenerating new parts, for the purpose of repairing what disease may have removed. The fact is, did the teeth possess such a degree of organization as to be enabled to throw off decomposed parts, and restore such loss by re-forming new substance, it would be attended with immense and manifest inconvenience. Wherever such process does take place in other parts, it is always attended by a vast increase of arterial action and nervous excitement in the part itself, and its

immediate vicinity. From the exposed situation of the teeth, as well as the functions they have daily to perform, such an increase of sensibility in them, would by no means be desirable, if indeed it would be bearable. Such defects in the teeth are only to be remedied by artificial means, and in doing this, we have additional proof of the slight degree of their organization. The solid substance of the tooth may be cut into without creating any other sensation than may be fairly attributed to the impression, which the instruments make, being very readily conveyed through so dense a structure, to the very sensitive parts internally and externally, with which they are connected. The deeper the defect extends, the nearer you approach to those sensitive parts, and of course, the greater will be the patient's sense of pain. In those operations, when the defect has extended to the internal cavity of the tooth, or so near to it that the thin intermediate bone is not sufficiently strong to resist the degree of pressure necessary for retaining the filling in its place, thereby permitting pressure to be made on the soft parts within the tooth, violent pain, followed by inflammation and suppuration of those soft parts, are the consequences. In this case, the pain is very acute and almost constant, until either the cause be removed, the tooth be taken out, or suppuration and death of such soft parts have taken place. But in a large majority of cases, the unpleasant feeling occasioned by the removal of decay, the operator must be competent, and careful to distinguish from that above described. In the latter, the sensation is occasioned by the impression of the instrument being conveyed through a dense medium, to parts extremely delicate, and the sensation continues only while the instrument is in contact with some part of the cavity on which you may be operating. It is the constantly meeting with those sensations, that have induced writers to declare, that nerves pass in all directions through the substance of the teeth. If, however, these sensations be strictly attended to, and the patients questioned, it will be found much less acute than in the former instances; not so local, but involving the whole system, creating a creeping, chilly feeling over the whole surface of the body. If

the decay is so situated as to expose, by its removal, a portion of the internal surface of the enamel, and the point of the instrument be scratched over it, this disagreeable sensation, (for thus patients generally designate it) is greatly increased, and is described as being similar to that produced by the scratching of a pencil on a slate, but much more intense—indeed, in those of very nervous temperaments it is scarcely bearable. Now it is impossible that this feeling should be occasioned by the instrument cutting upon nervous filaments; as into the enamel no one has yet ventured to assert that they enter, and even if it should be contended, that the enamel partook equally of this distribution of nerves, how can it be accounted for, that when the latter is touched, the sensation should be so much more intense than when the impression is made on the bone? If it depends upon what I have supposed, then the enamel, as being most dense, ought to occasion, as is the case, a more disagreeable feeling than when the bone is scraped, which is less solid. While decay is progressing in the body of a tooth, a sense of uneasiness is every now and then experienced, which, although not amounting to pain, is nevertheless sufficient to awaken a suspicion, that all is not right, even when the individual is not aware of possessing any defective teeth. This, Doctor Hudson attributes, and obviously with great propriety, to the crowding of the decayed matter upon the surrounding dense structure: for as the solid bone becomes softened by the extension of the disease, the moisture with which it combines causes it to swell, by which it is made to occupy more space than in a healthy state. This enlargement of the diseased parts produces a sense of tightness upon those which are sound, or rather, this impression is conveyed through the solid parts to the delicate textures internally and also externally, with which the teeth are connected.

But the proof that the bone of the tooth is not so highly organized, as to have nervous filaments intersecting its structure, does not rest here. If the teeth were thus endowed, and that the sensation I have described were produced by the instruments used in cutting out decay, lacerating or cutting, or otherwise coming in contact with nervous filaments, then the

foreign substance employed for filling those cavities, would as certainly create the same sensations as did the instruments. But this is notoriously not the fact. In a very large majority of cases, a defective tooth, when properly operated upon, gives no more inconvenience afterwards, than if that tooth had never been in the slightest manner diseased. The few instances to the contrary, are such as I have before described; and those in which, although the pulp is not exposed, and that the intermediate bone is thick enough to resist the pressure of filling, yet it is so thin, and the conducting property of the metal with which the cavity of the tooth is filled, is so great, that the sensation of hot or cold substances, taken into the mouth, is conveyed with considerable force to the pulpy matter within the cavity of the tooth, where it excites momentary pain, and if neglected, may bring on inflammation. This, however, by proper treatment, can be prevented.

From the foregoing remarks it will be seen, first: That the teeth are not sufficiently organized to throw off imperfectly formed matter, and to replace it by what is sound and healthy, previous to the tooth's passing through the gum.—Secondly—that they have not the power of re-uniting, if fractured, even with the assistance of the soft parts, to which they are attached. Thirdly—that where decay takes place, no matter from what cause, after the tooth has emerged from the gum, it does not then possess the ability of separating this diseased from the sound parts, nor of replacing the decayed matter, if that have been removed by artificial means. Fourthly—that the reason given by writers for believing that the bone of a tooth is intersected by innumerable filaments of nerves, viz. their sensativeness when operated upon for the removal of decay, is more satisfactorily explained on the principal of their compact structure. Fifthly—that the result of the operations of filling the cavities of teeth with foreign substances, is not such as it necessarily would be, if those nervous filaments did in reality exist. And sixthly—no one has ever yet pretended that they could trace them entering into the bone of the tooth.

There is, still, another fact in support of the belief, that the teeth should be considered as holding, probably, the lowest grade in the scale of the organization of the human frame. It is, that when healthily and perfectly formed, they are the most indestructible portions of our system. In this respect, they make the nearest approach to inorganic matter, which, like the teeth, does not possess the power of reproduction.

From the character of the foregoing remarks it will be easily seen, that I do not admit of a higher grade of organization in the teeth, than is sufficient to cause them to form adhesions with the parts which connect them with their sockets. That for this purpose a very high degree of organization is not requisite, can be established by a reference to other parts of the system: as for instance, the hair, and particularly the nails. As respects these, there is very little other evidence of their being organized than that they adhere to the parts beneath, and this they do with quite as much tenacity as the teeth. They are adduced, therefore, as evidence, that a high degree of organization is not necessary to insure strong adhesions between different tissues; and that it does not follow, as a matter of course, that because the teeth are strongly attached to the membrane which lines their sockets, they are likewise highly organized.

As regards the nourishment of the teeth, each writer seems to have copied his predecessor on the subject, without seeming to have taken much pains in testing the validity of the doctrine, or examining the soundness of the reasons on which it is based. It is asserted by authors generally, that the pulpy matter, met with in the central cavities of the teeth, is the source from which the teeth receive their nourishment; and some also add, that the membrane, connecting the roots and sockets, is likewise another source of their nutrition. It is a circumstance of not uncommon occurrence, to meet with persons of about the age of fifty, the cutting edges of whose front upper and lower teeth, instead of overlapping, as is most frequently the case when their back teeth are brought into close contact, meet each other. The consequence is, that about the age above mentioned, the upper and under front

teeth will be found worn down very short; and, on examining their grinding surfaces, it will be perceived in their centre that the bone has a more transparent appearance than elsewhere. This transparent bony substance fills up what was formerly the central cavity of the tooth, and in which was lodged the pulpy matter met with in teeth. In the instances to which I now allude, these pulps had continued to deposite bone, and to decrease their own bulk by absorption, in proportion as the teeth become worn down, until those central canals become finally and entirely obliterated. Had not this deposition of solid matter taken place, the nerves, &c. &c. of which these pulps consist, must have become exposed by the wearing down of the teeth, and the consequences, of course, are very obvious. It so happens that those teeth, notwithstanding that they are thus deprived of what writers assert to be their source of nourishment, still not only retain their situation as firmly as before, but in every respect perform their proper functions with as much certainty and success as if the internal canal and its usual contents were fully in existence. There is yet another circumstance of still more common occurrence. Every practitioner is now and then called upon to treat cases of decayed teeth, in which the disease has made such progress as to cause the contents of the internal canal of the tooth to become exposed by its removal. To remedy the difficulty which here presents itself, a variety of operations have been, by different practitioners, resorted to for the purpose of destroying the sensibility of those soft parts, so as to enable them to fill the cavity of the tooth with some suitable substance. With the exception of the mode introduced many years ago, by Doctor Hudson of Philadelphia, and most successfully practised up to the present day, the means had recourse to have failed, in a majority of cases, to deaden the sensibility of those internal parts, and by filling in upon them, in this state, violent irritation, followed by inflammation and suppuration, have been the consequences; under which circumstances, those practitioners have considered it most advisable to extract such teeth, from an apprehension that more serious evils might ensue. Still, in a sufficient number of instances, do they succeed in altogether destroying this

delicate pulpy substance, and are then enabled to fill the cavities with some of the metals usually employed for this purpose, without such teeth occasioning to the patients further inconvenience; and in this state they last just as long, and are quite as useful as if the decay had not extended so deep as to require the destruction of what writers contend to be their source of nourishment, and without which, say they, they ought not, nor cannot be retained in the head.* There are, within my own knowledge, innumerable cases of this kind treated by Dr. Hudson, ten, fifteen, and twenty years ago, and which are, at the present time, in a perfect state of preservation, and in every way as useful as any other teeth. In the common practice of setting artificial crowns on roots of teeth, and previous to which this nourishing principle, as authors denominate it, must be removed, we see those roots retained in their sockets five, ten, and fifteen years, and are then lost, not from their having been deprived of this means of nourishment, but from foreign matter getting into the cavity from which the pulp had been removed, and decomposing, softening, and destroying the root from that towards the outside, until finally the decay extends to the surface to which the gum and membrane of the socket are attached. The gum now becomes diseased, soft, and spongy; and from slight irritating causes, as the application of cold, &c. a high degree of inflammation is excited, which most frequently terminates in suppuration; and a repetition of these stages ultimately causes the attachment between the root and its socket to become gradually destroyed. The former getting looser and looser, finally drops out; or, in order to be relieved from the pain it occasions, and the offensive breath and other unpleasant effects attending it, the patient generally prefers expediting its loss by an operation. For the purpose of putting in a still stronger light the fallacy of this doctrine, I introduce the following interesting and satisfactory case from my professional note book.

August 1st, 1825. Case of Mr. L. When a child he had had the misfortune to receive a violent blow on the mouth,

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* See Koecker's work on Dental Surgery.

which almost knocked out his two central upper incisor teeth, and the left lateral incisor. Being replaced, however, they became completely fast again, after the inflammation and swelling, resulting from so violent a blow, had subsided. The inflammation of the soft parts, within those three teeth, had been so great as to cause their entire death, and in a short time they became very much discoloured; but, as to usefulness, remained quite as much so as if no accident whatever had happened to them. Their situation was such, with respect to the front under teeth, that in the course of some years after the accident, the upper or cutting edge of the lower incisors came in contact, in chewing, with the cutting edges of those discoloured teeth, which were consequently worn away, year after year, until about two years ago, when the central cavity of the right incisor, containing the dead nerves, blood-vessels, &c. became exposed. Into this cavity food and foreign matter would necessarily be forced during every meal; and in a very short time, a considerable swelling formed at the root of the tooth. By probing the cavity of the tooth with a tooth-pick, its contents were so far removed as to admit a free passage through it, by which the pus collected, in consequence of the inflammation, was discharged. In this way it went on for nearly two years, there being a constant exudation of pus down through the tooth. Whenever foreign matter chanced to get jammed tight within the tooth, so that the evacuation of the pus was prevented, a swelling of the external gum would take place, opposite the end of the root, which would continue to increase until it broke, and the pus, prevented from pursuing its usual course by the food, &c. collected within the tooth, would thus make itself an opening. By removing the extraneous matter from the inside of the tooth, so as to permit the constantly collecting pus a free passage in this way, the external swelling might always be prevented. The continuance of the discharge, I have no doubt, was owing to the irritation of food and moisture, &c. which constantly found its way through the tooth to the seat of the ulcer. Besides, this collection of foreign matter was constantly enlarging, by occasioning decay, the cavity of the tooth, and worse than this,

it was excessively offensive. On visiting me, Mr. L. observed, that he had a short time previous placed himself under the care of an eminent professional gentleman, who, after performing sundry operations, declared, that nothing could be done to preserve this tooth, and recommended, therefore, that it should be extracted; that the large incisor, adjoining, should be cut off even with the gum, and that to this root should be attached the crowns of two teeth to fill up the vacant space. Mr. L. not being willing to submit to such a course of proceeding, his dentist said he would make an attempt to save this deficient tooth. He, therefore, cleaned out its cavity, which he filled with cotton, and Mr. L. was dismissed with the understanding that he was to call the next day. As might have been expected, the exterior gum began very soon to swell and enlarged so rapidly, as to create in Mr. L.'s mind considerable alarm. In the course of a few hours, therefore, he visited his dentist, with his face greatly swollen and disfigured; who, evincing even greater apprehensions than the patient, pronounced it impossible to save the tooth; and that if it were not forthwith extracted, he greatly feared it would bring on a disgusting and dangerous disease. Mr. L. left his professional adviser to consider on what had been proposed; but not feeling convinced by what had been stated to him, he called upon me for my opinion, and on examination I had not the slightest doubt but that the tooth could be effectually saved. I was accordingly requested to undertake the operation. Having cleaned the cavity very accurately, not only from all foreign matter, but likewise from every particle of decay, I filled it very carefully with gold, taking care to avoid irritating the ulcer; all of which was accomplished without occasioning any particular uneasiness. The ulcer was then treated as an abscess would be if located in any other part, viz.—by making an artificial opening, so that the pus would have free egress as fast as it might form. In this way I expected the sore would heal up from the bottom, and the result justified my expectations.

August 2d—afternoon. He had taken cold last night by sleeping with his room windows up—a change having taken

place in the weather. It is rather tender and somewhat inflamed round the socket. Directed him to take a full dose of salts, a light vegetable diet, and water only to be drank. In a couple of days the effects of the cold had passed off. Every thing advanced favourably, and at the end of the second week the ulcer healed. Since then I have seen this gentleman repeatedly, and as lately as within the last two months, and he continues to enjoy the full use of this tooth without inconvenience or drawback in any shape or form. It is about thirty years since Mr. L. met with the accident of the blow; and from the particulars of the case, it is obvious that the three front teeth referred to, have been deprived, all that length of time, of their medullary matter, so far as it could be of any use to them; and no one can believe that, if their nourishment came from this source, and that they depended for their existence upon it, they could have remained in their present state of preservation and usefulness in the head, and with every reason to expect that they will so continue.

We shall find this point much elucidated by a comparison with what is known to take place in the growth of the flat and round bones. It is well known that the parts from which they are formed are entirely absorbed in proportion as ossification progresses, and at an early period of life altogether disappear; of course, can neither be the means nor medium by which those bones are nourished. So, likewise, is it with the pulp. It is intended for the formation, not the nourishment of the teeth; and in proof of this, as already stated, it is often totally destroyed by artificial means, intentional as well as accidental; and moreover, the canal, in which it is usually found, is frequently filled up by bony matter, without any hindrance to the usefulness or durability of such teeth; consequently, the pulps can neither be the source nor medium of their nutrition. From all this I think the inference is fair, that the source from which a part receives nutriment, is independent of that from which it is formed; that in the teeth the pulp is intended exclusively for the latter purpose: and that the necessary consequence of its destruction, is merely

that there is an end to any further formation of bony matter in such a tooth.

We have yet to examine whether this office may or may not be performed by the membrane by which the roots and sockets are connected. If we reflect that a large, I may say the largest, portion of a tooth is fully developed without this membrane being connected with it, it will readily be conceded that the latter cannot be the source of nourishment to the former. It is to the root of the tooth, and the root only, that this membrane adheres. Now the formation of this part does not commence until the crown is entirely completed; of course, if the crown requires to be nourished, it must obtain it from some other source; and that the root is equally independent, we shall presently give pretty conclusive reasons.—With this view I shall go on to show, first, that there is good reason to believe that the teeth do not require nourishment; and secondly, that there is no evidence that they receive it.

Our first inquiry, then, would be, what can be the object in nourishing any particular part? It must be, first, to provide for the increase in growth of that part; and secondly, for the renewal of such portions as may be taken up into the general system, to be then and in different ways disposed of; and this renewal and removal of parts can only be accomplished by means of arteries, veins, and absorbents, and, of course, nerves.

It is a general law of the animal economy, that from infancy to manhood all parts of our system should constantly augment by the accession of additional matter to that already formed; that during the middle period of life, the chief change is that of increase of strength and solidity, and very generally an enlargement in the bulk of the soft parts; and that, as old age advances, there is very considerable and perceptible shrinking and diminution of its several parts. Now, the only exception to this otherwise universal law, is the teeth. As soon as they have attained their full form, they never afterwards undergo any change, except what may be occasioned by accident or decomposition. In childhood a set of teeth is provided, few in number and small in dimensions; each tooth

of which requires from sixteen to twenty-four months for its entire development; after this it neither enlarges or decreases by any healthy action going on within itself. It is true, its root is, in the course of some years, absorbed; but this process is effected by vessels belonging to the soft parts in its vicinity. As this set does not keep pace with the growth of the frame, vessels for the purpose of its increase are unnecessary. But we are furnished with a second set when the system has so far enlarged that the first set would no longer be useful. Each tooth of this set requires a period of time for its full growth, which varies from seven to ten or twelve years; and when they have attained full maturity, no other change ever takes place in them of a healthy character. Now, I have already shown that, for the purpose of bringing the teeth to their full growth, the pulps, and they only, are necessary; of course, another set of vessels for the same purpose, (no matter where situated,) would be altogether superfluous.

As to the second point,—viz. the renewal of such portions as may be taken up into the general system—such a process would require not only vessels conveying the principles of nutrition, but absorbents likewise. But as such a system of vessels has never yet been detected, either by the closest examination, the most minute injections, or the changes which present themselves in that structure when diseased, it is not possible to conceive from what course of reasoning the inference of their existence is drawn. It may be objected, that there are other tissues of the system in which the most ingenious investigations have failed to establish the existence of any such vessels, nerves, &c.; but which, when diseased, exhibit the strongest evidence that they are thus endowed—as, for instance, ligaments, cartilages, tendons, &c. This will be readily admitted; but does the enamel or bone of the teeth, when decayed, present those marked symptoms which the diseased tendons, &c. do? By no means: they undergo no one of the stages of inflammation, suppuration, or exfoliation—nor does any other indication present itself of their being organized. If the decay has extended so deep as to occasion derangement in the medullary substance contained in the cen-

tral cavities of the teeth, then this medulla will be found to develope the same phenomena which other structures of equal delicacy exhibit; but the bone of the tooth undergoes no other alteration than a gradual decomposition and extension of the decay.

It may be urged against this statement, that portions of the roots of the second set of teeth are occasionally found to have been absorbed, particularly in the unnatural operation of transplanting the teeth; and in a somewhat similar proceeding, though by no means so objectionable a one, that of extracting a tooth entirely, or but partially raising it, and then returning it into its socket. In almost all cases of this kind it is found, that in from one to four years the tooth begins to get loose; it then occasions irritation in the soft parts of the socket, followed by inflammation and so much pain, that from this circumstance alone the tooth is obliged to be extracted, when it is found that the root is partially or to a considerable extent removed by the absorbents. This absorption, however, is unquestionably effected by vessels existing in the membrane lining the socket of the tooth, not in the tooth itself; and which vessels continue to perform the same office, after the extraction of the tooth, on the alveolar socket, until this likewise is entirely removed. Fox states, as a proof that absorbents exist in the teeth, that sometimes a considerable portion of the internal parts of teeth have been found removed by ulceration. This, if not altogether doubtful, is certainly of very rare occurrence; but were it very commonly to happen, it would fail in establishing the point. If absorption has really been found to have taken place, it was undoubtedly performed by vessels belonging to the pulp, which is unquestionably thus organized, for purposes of its own nutrition and removal, for it must decrease in size in proportion as the bony substance increases. This absorption of the pulp is a natural, healthy, and necessary process; that of ulceration, a diseased one. Now the latter must be preceded by inflammation, which of itself, even in a moderate degree, will occasion the death of the pulp in which it has arisen, more readily than a much higher grade of inflammation would in any other structure

throughout the system. The reason of which is, that in inflamed parts there is always a tendency to swelling; in the pulp this tendency is completely counteracted by the unyielding nature of the bony structure by which it is enclosed; compression, of course, takes place; excessive pain is occasioned; the circulation is interrupted, and entire death of those parts speedily ensues; and they then become incapable of acting on the bone of the tooth by ulceration. I have frequently examined teeth for the purpose, but have never met with any appearance that could, in the slightest degree, sanction the assertion of Mr. Fox. It is true, I have found the internal cavity of the tooth filled with an unhealthy offensive sanies, which was merely the medullary matter in a totally disorganized state; and I have had cases of this kind in which this matter had been confined in the canal of the tooth for many years, as in the upper teeth, but no indication that ulceration had ever commenced in the bone of the tooth, could be detected. Surely, if absorbents existed in this bony substance, there would have been some appearance of their attempting to make an opening for the discharge of what must have proved to them so very irritating: at least, we find this to be the invariable rule in all parts where absorbents unquestionably do exist. The most ingenious argument to be met with in favour of what I am combating, may be collected from the following quotation from Fox, whose work is undoubtedly entitled to the first rank of standard productions. After giving cases of ulceration, already alluded to, be goes on to state: "Besides these instances, the effects of absorption in the tusks of elephants are often seen; sometimes in sawing these bodies, iron balls, spear-heads, &c. are met with, which have been forced into them in attempting to kill these animals. These extraneous substances are always found loose, having a space in which they can be moved. This could never happen, unless there were some action going on, by which part of the bone could be removed; and there is no other mode by which it can be effected, but through the medium of the absorbent vessels."

In the first place, a greater similarity should be proved between the tusk of the elephant and a human tooth, than possibly can be done, before the laws which are known to govern one, should be inferred as governing the other; but waiving this point, Mr. Fox had only to call to mind the daily operation of filling cavities in the human teeth with foreign substances, as gold and tinfoil, &c. which are retained there without any loosening from the operation of absorbents, to be convinced that his parallel was in some way or other defective. But it can be easily shown, that even as applied to the elephant's tusk, the inferences he has drawn from his premises are erroneous. If those foreign substances were a cause of action in the absorbents, why should they cease their operations as soon as the foreign bodies are permitted to lie loose in the cavities? for, as they must touch somewhere, the absorbents should still continue their labours, until these foreign bodies be entirely excluded from the tooth. Such, at least, are the general laws by which this system of vessels are elsewhere governed. Without any great trespass upon the imagination, we think a more philosophical and satisfactory solution of this problem may be given. The velocity with which those iron balls, spear-heads, &c. must have been driven to enter so solid and dense a structure as the tusk of the elephant, must have created in those substances a pretty high degree of heat, which necessarily produced, in the metallic bodies particularly, more or less expansion. Being lodged in the tusk, however, and having parted with their caloric, they of course returned, when cool, to their original dimensions. In this state it would be found that they no longer filled as large a space as when they had entered.

We might go on to show, by referring to the experiments of Hunter, that they gave a stronger sanction to the views, doubtfully expressed by this distinguished physiologist, than his cotemporaries, or those who have succeeded him, were willing to admit. But it does seem that the points intended to be established are too fully and clearly made out to require further elucidation. If those views be correct, the obvious practical inferences to which they lead, of the certainty of

preserving teeth, which, it has become the fashion of writers of the present day to condemn, may possibly be a sufficient remuneration for the trouble of their perusal. I cannot flatter myself with the idea that I have not fallen into errors, or expressed opinions which will bear the test of strict criticism. I would, nevertheless, court a candid discussion of the points treated upon as the most certain means of arriving at correct knowledge, of giving an elevated standing to the profession, and of conferring benefit on the public. With such feelings and wishes, I commit these remarks to the consideration of my professional brethren.

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ART. IV. *Case of Un-united Fracture of the Os Brachii, successfully treated.* By J. KEARNY RODGERS, M. D. Surgeon of the New-York Hospital.

GEORGE WESTERFIELD, aged 15 years, was admitted into the New-York Hospital, July 25th, 1827, with an un-united fracture of the right Os Brachii, about two inches above the elbow joint.

The accident occurred in the State of Ohio, December 1824, by the limb of a tree falling on him. From the account given by the patient it appears that a medical man reduced the fracture immediately, and placed splints on the arm, which was then worn in a sling. At the expiration of twelve days the dressings were removed; and the union which he seems to have expected not having taken place, the ends of the fractured bones were rubbed against one another, and the splints re-applied. This treatment was persevered in several months.

In June 1825, a seton was passed between the ends of the bone and withdrawn at the end of a week; splints were still kept on the parts for four weeks.

No union following this treatment, nothing further was done until his arrival in New-York, in June 1826. In the latter end of which month, a seton was again passed by a surgeon

of this city. It was retained six months, during which time, motion of the parts was prevented by splints to the arm.

The seton having been faithfully tried and removed without any beneficial result, the patient almost despaired of ever recovering the use of his arm; but still was willing to submit to any expedient that might be proposed as likely to bring about an union of the broken bone. It appeared to me, that but one other mode remained which held out any prospect of success—Mr. White's plan of sawing off the ends of the bone, and reducing it to the state of a recent compound fracture.

I accordingly performed this operation on the 31st of July.

An incision about three inches in length was made through the integuments of the arm, on the outer edge of the biceps muscle down to the bone. The lower end was easily turned out of the wound, and half an inch sawn off with an ordinary saw. The upper end could not be turned out in the same way. Having, however, guarded the soft parts by a thin slip of wood, passed down on each side to the bone, about half an inch was removed by a circular saw. I now found it impossible to bring the ends of the bones into contact, in consequence of a slip of muscle passing between them. I divided this, and although they were then placed in apposition, they soon regained their former bearings—an inch and a half asunder.

Apprehensive that I should be foiled if the bones were thus far apart, I drilled a small hole through the shell of each end to the medullary cavity. Through these holes a wire was passed, and the ends of the bone were retained in coaptation. The ends of the wire were drawn through a canula which remained in the wound. The os brachii was much softer than natural, and excited my fear, that this state would prevent any ossific deposit.

The wound was dressed with adhesive straps and covered with lint; the arm was placed on a right angled splint, properly hollowed out.

August 15th. The canula fell from the wound with the loop entire, so that the bone must have broken away. The bones, however, continued in a proper position.

Not expecting bony union for some time, I scarcely examined the state of the bones for a month. During this time the wound had almost healed. Afterwards I examined it about once in ten days.

Oct. 8th. Sixty-nine days after the operation, I was gratified to find that the bone had united; but was unwilling to test its strength by force.

Oct. 16th. On examining the limb after an absence of several days from the city, I found the union firm.

For two months after the operation, my patient was not allowed to move from his bed, and during this time motion of the affected arm was prevented by splints. To the unyielding firmness with which my patient seconded my exertions, I attribute the success which crowned this operation.

Dec. 3. The patient was presented to the clinical class, with every motion of the arm perfectly regained.

The os brachii is shorter by two inches than that of the sound side.

*Dec. 12th.* 1827. 14 *Courtlandt-street.*

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ART. V. *Remarks on the Treatment of Enlarged and Indurated Tonsils; with a proposal for a new mode of removing them and Polypous Tumours.* By ALEXANDER H. STEVENS, M.D. Professor of Surgery in the University of the State of New-York.

THE term Scirrhous, as applied to enlarged tonsils, is improper: these glands are not subject to cancerous disease, but become enlarged in consequence of repeated attacks of scrofulous or other inflammation. When by their bulk they impede deglutition or respiration, especially during an attack of inflammation, to which, in this state, they are particularly prone, they become the objects of surgical treatment.

In cases of acute inflammation as soon as considerable tumefaction has taken place, I have found nothing so effectual in affording relief as free puncture or scarification, and even in a state of chronic enlargement, unattended with hardness,

repeated scarifications are often sufficient to reduce them to their natural size. There are cases also of indolent soft enlargement, occurring most frequently among scrofulous children, in which the enlarged tonsils gradually lessen as they acquire age or vigour of constitution. It may, therefore, be proper, in many cases, to postpone the operation. M. Dupuytren, however, with some plausibility, advises the operation to be performed early, because, as he alleges, the difficulty of respiration causes the children, in such cases, by calling the muscles of respiration into powerful action, to grow up with round shoulders, and a depresssion of the sides and front of the chest. He advises the children to be put into a pillow-case, and held on the lap of an assistant during the operation.

Whatever opinion may be formed of the notions of M. Dupuytren on this subject, there are cases in which the tonsils become so much enlarged, and present such serious impediments to respiration and deglutition, as to require surgical treatment.

The range of cases in which scarification is proper and applicable, as an effectual means of removing chronic enlargement, is, I apprehend, very limited: cauterization with caustic is still more uncertain and tedious in its results; while cauterization with the hot iron is justly banished from modern surgery. Of the remaining operations the French surgeons very generally employ the knife or scissors, in disregard of the danger of suffocation, witnessed by Moscati and Wiseman, from a partially separated tonsil, during an operation interrupted by efforts to vomit, falling into the rima glottidis; or rather avoiding that danger by cutting from below upwards, at the risk of wounding the velum pendulum palati, and of making an irregular section for want of space to use the knife; difficulties which Boyer proposes to avoid by dividing half the gland from below upwards, and the remaining half from above downwards. But the occasional occurrence of hemorrhage, sometimes fatal, according to Sharp, the repugnance which patients have to the use of the knife, the removal of the objections to the ligature by the improved me-

thod of employing the double canula suggested by Professor Physick, have united to establish in this country, a preference for that operation, which is likely to be as permanent as it is well founded. I must refer to the paper of Dr. Physick as containing a mode of practice by which the tedious and disagreeable presence of the canula in the mouth for five or six days is avoided. "It has hitherto been my custom," says the Doctor, "to allow the instrument to remain thus applied," [a double canula, with iron wire embracing the base of the tonsil, and tightened by drawing *one* end with a pincers, while the other is attached to one of the arms of the canula] "for twenty-four hours, with a view of destroying, completely, the life of the enlarged gland. I am however of opinion," he adds, "that a much shorter time, as six or eight hours, would be sufficient, which I propose soon to ascertain."

The separation of the dead tonsil he leaves to nature, and generally it does not take place until a lapse of several days, during which time the patient is annoyed by the excessive fœtor of his breath, with consequent disgust for food, and when taken off, some of the tonsil is occasionally found to have maintained its vitality.

I have practised the operation as recommended by Dr. Physick several times; and although my first trials were unsuccessful, as well as those of others which I witnessed, I finally succeeded. I have not found it easy to hold so slight an instrument as the double canula with sufficient steadiness to draw the loose end of the wire with the requisite firmness to strangulate, completely, every part of the tonsil. The operator is liable to jerk the wire rudely, and exercise a painful traction on the gland, and when he supposes the object sufficiently accomplished, on a closer examination a portion of the tonsil next the attached end of the wire is seen to be slightly red, and not of the cream-white colour that denotes an entire interruption of the circulation, or perhaps this appearance occurs after a lapse of some hours, when the strangulating pressure is diminished by the wire being buried in the substance of the part.

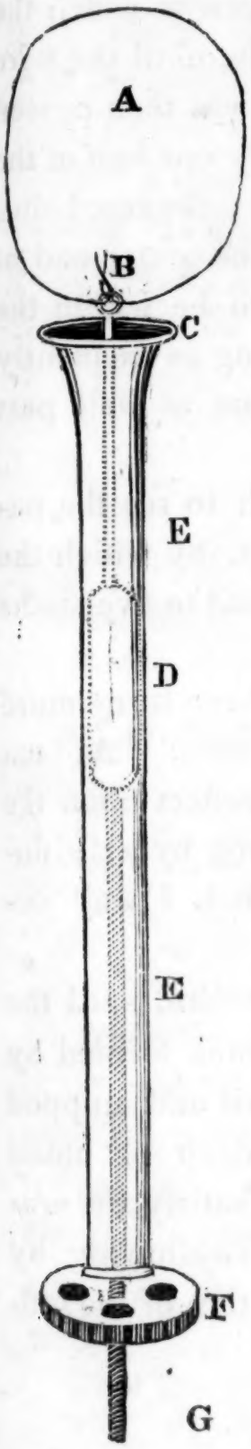
Such were the results of my first trials, but finally, with great attention, I was able to destroy the gland in twenty-four hours, and by one tightening of the wire. But the wire frequently broke under the force necessary for the purpose, and I was led to consider what further improvement, if any, the operation was susceptible of, and my views were directed chiefly to the following objects—

1. That the traction on the wire be made in a more steady, gradual, and *measured* manner, so as to avoid the risk of pulling the gland while tightening the wire : for this, the power of a screw seemed well adapted.

2. To make pressure alike on both sides of the gland, and to diminish the risk of breaking the wire by *drawing upon both ends instead of one ;* and to secure the latter object still more completely, by taking off the sharp edges of the canula over which the wire makes a short turn, *by making the canula trumpet-shaped.* With these views, I have constructed an oval-shaped single canula, about four inches long, receiving through its whole length a steel male screw, with an oval shoulder near one end, which is perforated with a small eye ; to the other end is fitted a small female thumb-screw. The eye receives two ends of iron wire well annealed and tough, an inch of such size that weighs a little more than one grain. I take of this wire a piece three inches and a half in length, and passing one quarter of an inch of either end in contrary directions through the eye of the screw, I twist them upon each other. This leaves a circle of an inch diameter, and the wire, when drawn straight, was one and a half inches from the eye of the screw, which when fitted to the canula was exactly flush with it. It was easy to see how such an instrument might be applied so as to act with certainty, ease, and regularity. Such was my plan for effecting a perfect strangulation.

I was then led to reflect what further effect might be the consequence of that prodigious force which the screw exerts, and which a small wire under proper precautions supports, and it occurred to me that the wire might slightly cut the tonsil ; at any rate, it might cut the vessels which were going

into it, and even if it did not, they would be closed in a few hours by the effusion of fibrin beyond the circle to which the wire was applied, and that under these circumstances there would be no necessity of waiting for the gradual separation of the eschar, but that the wire might either be screwed up so tight as to *cut* it off, or the neck might be severed with a scalpel or scissors without danger of hemorrhage. With these views, I had constructed the instrument represented in the following cut:




A. A circle, three inches long.

B. The ends of the wire passed through the eye of the screw, twisted upon each other.

C. The trumpet-shaped end of the canula.

E E. The canula seen flatwise.

D. The screw in this part made to fill the cavity of the canula.

G. The male screw, one inch and a half long.

F. The female or thumb-screw. The holes near the circumference are made to lighten the instrument.

The first case to which I applied the instrument was that of the daughter of a medical gentleman of this city, now deceased, in whom the left tonsil was so much enlarged as entirely to hide the uvula. The operation was done in the presence of Dr. Thomas Cock and several of his and my pupils. The gland was drawn out by a small double hook passed through the wire, previously inserted under the lower edge of the tonsil. The hook was now given to an assistant, while with the forefinger, I depressed the tongue and adjusted the wire to the base of the tonsil, and drew the screw to which the wire was attached directly out from the canula, until the wire was buried in the gland. The thumb screw was then passed rapidly down, and it was made to act until only one half of the length of the wire was left around the tonsil; the rest being ascertained, by measuring the distance of the outer end of the screw from the outer end of the canula, to be within the canula. The usual salivation, but not vomiting as frequently happens, followed. The operation was done at half past ten, A. M.

At three, P. M. Dr. Cock was kind enough to see the patient, and gave the thumb screw three turns, by which the length of the wire around the tonsil was reduced to five-sixths of an inch in diameter.

At six, I gave three turns more; at eight, three turns more —the wire was now reduced to half an inch. At ten o'clock, as the wire did not break, I began to reflect upon the best mode of detaching it, as the tonsil now hung by a pedunclе only one-sixth of an inch in diameter, which I was determined to divide.

I purposely turned the thumb screw, therefore, until the wire broke—separated it, and with a small hook formed by bending the point of a probe, I seized the tonsil and snipped it off with a pair of scissors. Scarcely a drop of blood flowed, and the patient began immediately to satisfy the cravings of hunger, having been prevented from swallowing by the presence of the canula. Thus the extirpation of the tonsil was effected in less than twelve hours.

Upon examination, the gland had undergone no decomposition, but was evidently hardened and compact in its structure, in the part which the wire had strangulated. The neck divided with the scissors was smaller than the barrel of a goose quill, and was clearly distinguishable from the other parts of the gland.

The second case in which I applied the wire with the instrument I have described, was that of a lad of the name of Stewart. I removed it, and cut the neck at the expiration of eight hours. About eight ounces of blood was lost, which with the pain caused by the wire and exhaustion for want of food, caused him to faint.

After a short time, when the ulcer left by the division of the neck of the gland had cicatrised, I removed the second in the same manner as in case 1st. Twelve hours, therefore, I conceive to be the time at which may be safely divided the neck of the gland.

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ART. VI. *Observations on Intermittent Fever.* By JAMES FOUNTAIN, M. D. of Yorktown, Westchester County, New-York.

AT no period within the space of fifteen years has intermittent fever prevailed so generally throughout the state of New-York, as during the last two years. For a long time previous, it had become almost a stranger in the southern and eastern parts of the state, except in some fenny districts. Together with the pleurisy, it disappeared on the irruption of the pneumonia typhodes or winter fever, which commenced in the year 1806, in the state of Connecticut, and spread generally several successive winters. This scourge of the country and of districts noted for salubrity, overrun the land, as Dr. North observes, "like a flood of mighty waters," bearing away the athletic, the principal men, and heads of families.

That the pneumonia typhodes was produced by a modi-

fied combination of the causes of intermittent fever and pleurisy, I shall not venture to assert; but that it supplanted these diseases is certain: and it is equally certain, that it exerted a modifying influence on all inflammatory affections, and rendered the use of the lancet precarious on all occasions. It has at length disappeared, and intermittent fever has again become common, and demands the attention of every physician.

Among the sciences, that of medicine must continue to advance as long as the mind of man retains its distinctive faculty of progression, and enjoys the privilege and opportunity of unrestrained investigation. It has been satirically said, that the science of medicine progresses, but moves in a circle. Should the force of the satire be applicable to any part of our interesting study, it must be to intermittent fever; for it cannot be denied that we are as ignorant of its true theory as was Hippocrates himself. Recently, however, a new theory of fever has sprung up, of which M. Broussais is the reputed author, although it was long ago clearly delineated by Gengii Baglivi, in the year 1758. It attributes all fevers, formerly denominated idiopathic, to inflammation of the mucous membrane of the stomach and intestines. Notwithstanding all that the brilliant genius of M. Broussais and his disciples may suggest, intermittents will ever remain a rock on which the system must split, and like the visionary theories of Cullen, Brown, Darwin, and Clutterbuck, it must either fall or suffer material modifications.

Neither have we, since the days of Sydenham, made any material improvement in the treatment of intermittent fever. The gastro-enteritic theory brought forth its legitimate treatment, and leeching the abdomen, and mucilages and dilution, or "the medecine expectante," usurped the place of cortex-cinchona, which is, of course, utterly condemned. This powerful article, used as it generally is, indiscriminately at all periods, is not wholly unworthy of the opprobium so freely bestowed on it by the anti-ontologists, as the disciples of Broussais style themselves. The quinine in particular, having its power so much more concentrated, is daily

committing evils of no small magnitude. Its being so easily obtained, and the general idea of its being a specific, or something exactly adapted to the cure of agues, contribute much to its untimely use; the consequence will be and even now is, a kind of re-action, and its value will suffer an undue depreciation. From the opportunities so amply afforded of late, some improvement in the principles of the therapæia of Intermittent fever must have suggested itself to the minds of such as are not wedded to favourite theories. This is all I shall attempt in the following Essay.

*Causes.*—As to the remote causes of intermittent fever, I have nothing material to add to what I have already advanced in the 19th number of this Journal; nor have I there advanced any thing I wish to retract. The division of the remote causes into predisposing and exciting, and the propriety of adhering exclusively to this division, is, in my opinion, unquestionable. While the predisposing causes are as numerous as are the means of interrupting our health, there is but one set of exciting causes, and this includes all miasmatic exhalations from marshes, soils, &c. In proof of this position no higher authority is necessary than Dr. Gregory and his accomplished commentator, Dr. Potter. Dr. Gregory's opinion may be gathered from his System of Practice, volume 1st, p. 119 et seq. on which Dr. Potter thus comments—"But we may safely deny that that particular assemblage of symptoms, flowing from the product of vegetable putrefaction [intermittent fever], has ever been observed to have arisen from any other source." Miasm, then, being the only exciting cause on all occasions, it certainly cannot alter the principle of their action, whether the predisposing causes operate antecedently or subsequently to their introduction or application. The exciting causes cannot produce the disease until the predisposing have prepared the system for their operation. A man may remain months with uninterrupted health in a fenny district imbued in miasms and thoroughly impregnated with them, until a debauch or some irregularity of conduct shall disturb the harmony of healthy movement among the

functions, and throw the *vis vitæ* off its guard, or impede its operations, and thus render the system an easy prey to disorder, when the disease will be immediately called up by the exciting causes, waiting an opportunity to act.

By exciting cause, is meant that agent which calls into action, or gives rise to "that particular assemblage of symptoms," primarily characterising the disease; for Dr. Good observes, "the cause introduces a tendency to a recurrence of the paroxysms from the first;" and Professor J. M. Smith* also observes, that "the nature and character of diseases are, for the most part, determined by the remote causes which produce them." Consequently, intermittent and remittent fevers must arise from different causes; for Dr. Parr observes, "if a specific difference can be established in any branch of natural history, it must be in the separation of remittents from intermittents. Dr. Good also says, "if intermittents ought to be separated, (as unquestionably they ought) from continued fevers, so ought remittents to be separated from intermittents." Now if the causes of fevers tend, as Drs. Good and Smith observe, to produce a peculiar movement, and if that constituting intermittent and remittent fever, be "specifically different, as Drs. Good and Parr both contend, then the position that they arise from different causes is established.

This, however, is far from being the fashionable doctrine of the present day, for Dr. Armstrong, a popular writer and sound practitioner, insists that intermittents, remittents, and typhus fevers arise from the same cause, differing only in grade of intensity; consequently, that human and marsh effluvia are identical.

By the expression, "different grades of intensity," or "concentration," a very vague idea is conveyed. If by these terms is meant something analagous to the different grades of acidification, as for instance, the union of oxygen with nitrogen, it must be remembered, that elementary substances, according to the established Daltonian theory, che-

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* Philosophy of Epidemics, part I.

mically only in certain definite ratios; and that every combination forms a new, distinct, and often totally dissimilar substance, capable of producing even opposite effects on the living fibre, which upset, at once, the theory of the identity of causes.

By "different grades of concentration," there must be understood something else, and the term can only be used to signify more or less dilution of the cause with atmospheric air, as an acid is more or less diluted with water. It follows as a consequence, on this principle, that those who contract fever nearest the source of the cause or focus, should have one form, and that every other, from the centre to the circumference, should have another character of disease, a circumstance never yet recorded.

During the encampment of the militia at Haerlem heights, in the year 1814, two young men sickened of typhus fever, and were conveyed fifty miles into my district. No fever was then prevailing in the country, yet three of one family, and six of the other, and several friends who visited them only occasionally, contracted the same disease. Being indigent, their confined effluvia no doubt generated the fever in all, yet none, even the clean and healthy visitors, had intermittent fever. Besides, how often has typhus fever prevailed extensively in the New-England States and in Europe, and no intermittent has, at the same time, ever been noticed. Now during the prevalence of these epidemics the causes must have been extensively diffused and variously diluted, and people of good and bad habits must have been exposed to their action: fevers of all types and characters must have occurred promiscuously, which no one is prepared to assert. Different grades of the same epidemic have been noticed and acknowledged by all writers and practitioners, yet every case bore the stamp of one character, which was always impressed, not only on the epidemic, but even on other diseases tending to convert them also to its own peculiarities. It is now confessed that remedial and all other agents tend to produce a peculiar or specific effect, both local and general, and this they do whether introduced into the stomach or general circulation.

The exciting causes of fevers tend not only to shape them after their own manner, but to produce an identity of local effect; witness erysipelatous fever, scarlatina, cynanche maligna, &c. &c. It is in the open country that epidemics show their real character. In cities, a great variety of malaria are frequently present, and each tending to produce its own movement, a complicated and frequently undefinable train of symptoms is the result, denominated by my friend Professor Smith, *idio-koino-miasmatic.* A fever may be intermittent at the invasion, and by improper management the solids may become exhausted and the fluids become filled with excreta, or the product of human effluvia absorbed from a filthy external or internal surface, or confined atmosphere. The intermittent character is thereby overruled by these accessary agents, and the all-devouring typhus is the result. The tendency of all fevers is to exhaust the solids and fill the fluids with appurtenances of animal matter; so they all tend, unless arrested by nature or by art, to assume finally a sameness of character, usually denominated *typhoid.* Hence, by an accession of effective causes an intermittent may be compelled to remit, or to become continued. This, however, falls far short of proving the identity of all the primary causes of fevers. No man can deny that a fever, especially a protracted one, is a series of effects from adventitious agents or conditions no ways allied to the original cause, and differing, consequently, not in grade, not in concentration, but in essence.

*Pathology.*—Intermittent fever has so long been considered as depending on debility, that even at the present day this is the general opinion of the American and English physicians; and it has arisen principally from a mistaken notion of the modus operandi of the remedial agents. The very reverse of this, however, it has already been observed, has been advanced and supported by M. Broussais, the celebrated French reformer. He maintains, and not without some show of plausibility, that there is such an occurrence as an intermittent inflammation. The theory is rapidly advancing, and gastro-

enterite has become a common phrase. The doctrine of M. Broussais is based on the following circumstances:

1st. Pain in the region of the stomach; 2d. Post mortem appearances; 3d. The means of cure. On each of these, I shall make a few remarks.

1st. *Pain in the region of the stomach.*—To prove that this sensation is oftener the effect than the cause of the disturbance of the system, it is sufficient only to advert to the physiology of M. Broussais himself. In his section on the passions he mentions, "pain and a sense of constriction" at the pit of the stomach, as the effect of all. Speaking of anger, he observes, "the idea which produces it succeeds only 'by exciting an acute pain in the epigastric region.' During a fit of anger the blood is precipitated, with violence, to the encephalon and other viscera," and gastritis is the consequence, which by re-acting on the brain, produces the most violent movements. Thus gastritis is always necessary, according to this author, to finish a fit of anger. Even pleasureable sensations are, according to him, distinctly felt at the "epigastric region."

Dr. Johnson observes, "I repeat it then, that tenderness in the epigastrio is an exceedingly fallacious sign, and no criterion at all of organic disease in the parts underneath;" and he concludes, of a whole regiment every man would "wince" on examination.

The stomach has been called the centre of sympathies; the mucous membrane of the stomach, says Dr. Armstrong, is the most sensible tissue of the whole body. It is called, "the internal sense," the "primum mobile," &c. From these circumstances it must be expected that pain, constriction, anxiety, &c. will be felt at the pit of the stomach, from every considerable commotion of the system, whether corporeal or mental, which cannot therefore be considered alone as diagnostic of any specific pathological condition. These sensations, though primarily nervous, do frequently, if long continued, involve the whole structure and become a real inflammation, modifying and sometimes completely changing the character of the whole disease. Pain in the region of the

stomach, then, when present, can be viewed abstractedly in no other light than an effect of uncertain causes, frequently acting through the medium of the whole nervous or vascular system, and manifested in the " centre of sympathies," which suffers in a ratio proportionate to its sensibility, and the important part it plays in the animal economy. This condition, although an effect, may and frequently does become the leading feature, the most prominent link in the chain of causes and effects constituting an established fever; being, however, no more the primary cause than a host of other local affections, frequently developed in the course of a fever, which become, in their turn, leading causes.

2nd. *Post mortem appearances.*—A part so important, so sensible, suffering from every passion, every emotion, and withal so vascular and delicate in structure, must suffer materially and manifestly from every cause capable of producing death. Thus the French found marks of gastritis in healthy dogs recently hanged, and they concluded that these animals must have laboured under chronic gastritis, which by the by, M. Broussais says does not prevent people from becoming " extraordinarily fat."

Drs. Bretonneau, Troussiau, and Rigot, have often observed a redness and softening in the substance of the stomachs of dogs and horses killed in perfect health, and they have satisfactorily proved, in their opinion, that the redness observed in the mucous membrane of the stomach and intestines, by the disciples of M. Broussais, and held up by them as an evidence of previous inflammation, was produced by the stasis, or settling of blood during death. No evidence, therefore, of the gastro-enteritic origin of fevers can be based on post mortem appearances.

3d. *The means of cure.*—No one will deny that intermittents will frequently terminate favourably under the *medecine expectante*, or treatment of leeching the belly, abstinence, dilution, &c.; nor will any one deny that they will often thus terminate without any medication at all, so much so, that computations have been made and results obtained, of the number of paroxysms naturally constituting a course of inter-

mittent fever. If a spare diet and rest be adopted, the disease will frequently terminate spontaneously; many times, however, it will not, but continue purely from habit, one, two, or more years, even up to thirty-eight. It is said, these protracted cases are kept up by inflammation or scirrhus of some viscus: but I have several times arrested cases of two years' continuance by three or four grains of arsenic, given twenty-four hours previous to the expected paroxysm, without the least immediate or remote inconvenience. This fact argues strongly that the disease is not dependent on any local condition.

M. Broussais condemns, in the most unqualified terms, the use of bark in intermittent fever, as he is bound necessarily to do by his theory; but unfortunately for his system, those patients who have them soonest *properly* arrested by bark or similar means, suffer least from chronic derangements of the viscera.

It is contended that bark does not cure intermittents, but only prevents a recurrence of the paroxysms, and this is generally, though not necessarily, true; for necessity has several times compelled me to give arsenic through a paroxysm, yet a cure was nevertheless accomplished. This is by no means a good practice, yet it shows what may be done; but it is what could not be effected, were the gastro-enteritic doctrine of this disease true.

Besides; any of the violent passions are sufficient to arrest an intermittent, when, according to the physiological doctrine of M. Broussais, they all invariably and necessarily produce this identical gastro-enteritis, and ought, therefore, instead of curing, to develope the disease.

Having now considered in what the disease does not consist, I shall proceed to hazard an attempt to show in what it does consist.

Dr. Barres, or his reviewer Dr. Johnson, says, "intermittent fevers themselves, in their simple forms, have nothing inflammatory *at bottom*;" and Dr. Dufau has concluded "that intermittent fevers are probably febrile irritations." These two opinions I shall set up as land-marks, and endeavour to

substantiate, with some modification, their correctness in a leading point of view.

Systematic writers, I am persuaded, never suffered intermittent fever in *propria persona*, or they would have begun their description several days prior to a regular and complete paroxysm. The disease never invades a person in this manner, as it does in some cases of relapse; but for several days previous, the subject feels a degree of lassitude, wandering pain, head-ache, &c. which recur at irregular periods, leaving intervals of partial relief. Meanwhile, a little chilliness is perceived, the pains and uncomfortable feelings are aggravated, and again more clearly abate. In this manner the disease continues to baffle an indefinite length of time, when on a sudden a complete paroxysm is evolved. During this forming stage the morbid process is mainly confined to the nervous system; the tongue is not coated, the appetite is unimpaired, nor are the functions in any great degree deranged; but when the disease becomes established, the appetite fails, the tongue becomes loaded, and for many subsequent days the functions are imperfectly performed even during the intermissions, and an evident inflammatory diathesis is developed in the system. As the disease advances, this inflammatory diathesis is worn off by abstinence, by exhaustion, dilution, or quietude; the appetite returns immediately after each paroxysm, digestion is restored, the strength is gradually increased, the intermissions are protracted, the paroxysms decline, and finally recur no more. This is the regular course of an intermittent fever in a good constitution, uninfluenced by local circumstances, and may be considered its natural tendency. I shall, therefore, divide the whole course into three periods, having three correspondent states, differing essentially from each other: they may be denominated *its formation, its inflammatory, and its independent states.* In order to establish a rational practice, I shall consider each period separately, from which some important therapeutical precepts may be obtained.

1*st Formative period.*—The cause of intermittent fever is confessedly an invisible substance, the product of the play

of chemical affinities among the materials of marshes, soils, &c. and all agents acting primarily on the nervous system; it follows of course, that the first evidences of disorder are manifestations of this tissue, acting under the combined influence of the morbific agent, and the inherent tendency of the living power to maintain its own movement. This complicated and confused respondence of the nervous system continues longer or shorter, according to the feebleness or intensity of the morbific agent and the condition of the living fibre. Intermittents and mild remittents are several days forming, while the causes of some malignant fevers subdue the powers of life at once. The forming stage being an agitation of the nervous system, and consisting of a perverted or "altered action," it may be called, according to Sir Astley Cooper, a real irritation; and during this period it may be said to belong to M. Seguin's and Dr. Jackson's division of nervous irritation.

As a consequence of this condition, secretion, calorification, and all the functions depending on nervous influence, finally become affected, excitability is diminished, and the force of the circulation being thereby reduced, the blood gradually ceases to flow in the extreme vessels, they collapse, and the cold stage is the result. The fluids collect about the centre of the circulation, the heart and large blood-vessels become engorged, and from the unusual quantity of stimulus applied to them, they are at length aroused and soon act violently, and the hot stage is developed, which at length terminates in a profuse sweat; this for a time relieves the internal parts, the general commotion subsides, and henceforth the disease assumes its real character.

2d. *Inflammatory period.*—Independent of the natural tendency of irritation to produce inflammation, the violent action set up throughout the system must conduce to the same end. Besides, the complex structure of the liver, the delicate and highly vascular nature of the mucous membrane of the alimentary canal and of the nervous system, cannot be so violently assailed with impunity, and an acute inflammation is kindled up in these parts, during the hot stage, which is par-

tially relieved by the sweating process which ensues. I say *partially*, because the subjects of this disease invariably exhibit, at this period, a white scurf on the tongue more or less yellowish, a bitter or nauseous taste in the mouth, diminution of appetite, some thirst, a heavy unpleasant feeling in the head, weariness and a general disinclination to exercise both in body and in mind. This group of symptoms commences with the first regular paroxysm, and continues from ten to fourteen or twenty-one days. If the course pointed out by instinct, quietude, &c. with the use of laxatives be pursued, the inflammatory condition will not unfrequently soon subside, and all the morbid phenomena consequent thereon will disappear, and nothing but pure debility will remain during the apyrexia.

3d *Period.*—The tongue now becomes clean, the appetite good, the skin very perspirable, and no symptom of either local or general inflammatory diathesis remains. The disease now becomes fundamentally an uncombined and independent nervous irritation, and may continue months, and even years, although the subject of it be removed out of the reach of the causes from which it first originated. Furthermore, it may be arrested and health may seemingly be well established, and yet, like epilepsy, chorea, hysteria, &c. it will recur from any considerable interruption of health, and that too with all its train of identical phenomena, which cannot be referred to any other principle than that of an impression created and retained in the nervous system.

Would time permit, it would be an easy matter to prove that when, from any cause whatever, prostration of strength is suddenly induced, or the regular performance and harmony of the functions interrupted, the nervous system is prone to act in a desultory manner, giving rise to a variety of complicated and mysterious movements. During this state, all habitual actions and associations are more readily developed than those to which the nervous system is unaccustomed; hence the morbid process constituting intermittent fever having been once established, is again more readily called up. I have known it re-induced by a fright and by a fall from a horse. In these instances it came on instantly, and pursued

an uninterrupted course with its usual type. Besides, it has been known to be a local disease, affecting one arm only; and I once attended in a case in which it was confined to the nervous system, producing an undescribed and undefinable state, in which violent jactitation, screaming, gnashing of teeth, and a host of similar movements were manifested; the mind remaining all the while unaffected. From all these considerations taken collectively, I am induced to adopt the opinion of Dr. Parr, that intermittent fever when once formed, is a creature of habit, seated of course in the nervous system, independent of any inflammation, and consequently it must be "an intermittent nervous irritation."

*On the duration of Intermittents, and their complications and conversion into Remittent and Typhus Fever.*—After a laborious research, Dr. Bailly, a celebrated French physician, has arrived at the conclusion that the mean duration of intermittents is fourteen days. A little consideration will be sufficient to convince any one of the uncertainty of any such conclusions. Conceding that intermittents are never continued by habit, but terminate with the reduction of the susceptibility to the impression of the remote cause, or of the inflammatory diathesis, the difficulty is still far from being removed. The susceptibility to the impression of all agents is well known to vary greatly in almost every individual; and the same may be said of inflammation, whose duration, no less than intensity, depends on the condition of the subject affected, plethora, rigidity of fibre, diet, temperament, &c. These and numberless other accidental circumstances of the individual are acknowledged to influence its continuance, and consequently the length of the fever.

Intermittent fever is liable to be complicated with a variety of local affections, either accidental or of its own developement; among the latter may be mentioned, congestion or torpor of the liver, spleen, pancreas, &c. These are sufficient to keep up the disease any length of time. The accidental circumstances with which it is liable to be complicated,

are the endless variety of incidents attendant on humanity, all the phlegmasiæ, wounds, contusions, wrenches, dislocations, fractures, scirrhi, uterine affections, the accidents of child bed, &c. These operate by impeding the regular performance of the functions necessary to constitute a healthy action capable of withstanding the tendency to perverted movements; therefore, the morbid associations continue until these impediments are either removed or mitigated.

Intermittent fever may be converted into a remittent, and be made to terminate in a typhus state by different means, which may be adventitious or concomitant.

1st. *Adventitious agents.*—Large quantities of stimuli, administered to shorten the cold stage or force out a sweat, induce such a violent action of the vascular system as is incompatible with the sweating process, and relief from that source cannot be obtained, and the consequence is, that instead of a complete intermission, a remission from exhaustion only is realized. If the stimuli be now continued, especially if the bark or its quinine be added with animal food, they remain still less perfect and the exacerbations more severe. This state is undeniably the effect of the primary causes and adventitious agents, and assumes the name of remittent fever.

By a retrograde course of management a perfect intermittent may be readily obtained. But let the same course of procedure be pursued, and in addition, let the intestinal canal become loaded with putrid colluvies and the skin with filth, exhaustion of the solids by excessive action, and vitiation of the fluids by absorption next ensues, and the consequence is debility, a brown or black furred tongue, and all the symptoms of typhus fever. The laws of excitability governing the respondence of action are now changed, the solids, fluids, and living principle being thus affected, total disorder prevails, in which the primary agents can have little or no participation. No retrograde course of management can now revert the scene, the misguided steps cannot be retraced, but health must be restored by a circuitous and indirect route.

2d. *Concomitant means.*—These are, 1st. A vitiated condition of the fluids consequent on a filthy habit of life, and a diet of putrefying materials, common to the poor of large cities. The primary causes of intermittent fever and these concomitant agents acting together on the living principle, each part of the body being dissimilar, tending constantly to produce its own peculiar movement, confusion and derangement of action obtain, and a remittent or typhus fever is the result, being the combined effects of the whole group of causes by which those essential to the formation of intermittent fever are overruled.

2d. *Debility;* a due degree of energy is necessary to sustain the system under the evolution of the different stages of intermittent fever, therefore debility alone may prevent its accomplishment, and a remittent and typhus may result from this failure.

3d. The different phlegmasiæ may exist cotemporaneously with the developement of intermittent fever. These by maintaining an inflammatory action, prevent the apyrexia, and a remittent is the consequence, which by exhaustion and corruption may degenerate into typhus.

4th. Rigidity of fibre, as it is called, or an inflammatory disposition of the whole system, may produce the same effect by a similar course of influence.—Hence it may be rationally inferred, that when remittent or typhus fever supervenes on intermittent, they are the effects of accidental causes, many of which are unavoidable, whilst others may be easily evaded by good management.

Notwithstanding remittent and typhus fevers are thus frequently induced, they often arise singly and epidemically from causes, the tendency of whose primary operation is the exclusive evolution of these fevers. I have known remittents to prevail, many of which were of a grade as mild and more tractable than any intermittent, and of shorter duration.

*Prevention.*—To the physician this is the least important part of the subject, except as it regards his own preservation;

but to the community it is of the utmost consequence. The truth of this, however, is seldom duly appreciated by the populace; the rigid precepts of hygiene run too opposite to their natural propensities to be relished by them, and they pass heedlessly on until their attention is arrested by the rigors of the fenny enemy. In vain physicians inculcate the necessity of regular habits, temperance, &c.: their words pass idly by, and no measure is adopted, except the pernicious anti-fogmatic dram.

The theory of prevention may be rationally inferred from the etiology of the disease; and if it be found conformable to experience, it will have a double claim to notice.

The great exciting cause, or that which gives it origin, essence, and character, is confessedly an *agent*, which tends constantly to diminish the susceptibility to its own impression; consequently by constant application, the system becomes insensible to its action, or acclimated, as it is termed, but more properly habituated; therefore, by evading those causes which give it activity, its presence may be finally unfelt. Unfortunately, however, for those who live in fenny districts, the return of winter, in some measure, breaks up this habit, and renders them again liable to be affected.

Towards the removal of the source of the miasm, physicians can do but little. This can be effected only by draining and drying swamps and all marshy places, or by keeping them constantly covered with water during the hot months. But where these measures cannot be adopted, our only hope of escape must be placed on avoiding the predisposing causes, or those which prepare the system for the evolution of the disease. These, it has been observed, comprise every thing that has a tendency to interrupt the regular, or induce a feeble performance of all or any of the functions necessary to health; thereby giving the exciting causes an opportunity of calling up the disease. The accomplishment of this object includes the whole system of hygiene, requiring volumes for its discussion. Some of its most important points, however,

may be obtained by classing and briefly noticing the predisposing causes. They may be divided into three classes :—

1st. Those which clog or suffocate action by their excess. This class comprises plethora and accumulation in the primæ viæ, either of filth or an undue quantity of food, which soon becomes such by fermentation.

2d. Those which exhaust by their stimulation, or derange by their quality. This class comprises every cause, both physical and moral, capable of producing excessive action, and still short of the suffocating grade.

3d. This class comprises every cause tending directly to enervate the system, as cold, the depressing passions, depletion by evacuations of any kind, &c. for as Dr. Burney justly observes, " the less energy a person has, and the weaker the natural action is, the easier it is changed or destroyed."

By avoiding these causes—by adopting regular habits—by living soberly, righteously, and temperately, neither suffering excessive stimulation nor deprivation—by maintaining equanimity, with a confidence of mind that knows no fear—we may secure a comfortable share of health amidst pestilential vapours, disease, and death.

*Treatment.*—Since the introduction of quinine, the treatment of intermittent fever has become almost purely empirical; the consequence is, that the medicine, so important in itself, has depreciated considerably in the public estimation. Nor is this at all surprising, since it is resorted to, not only by the people, but by the faculty at all periods of the disease, and under all circumstances. Containing the active principle of the bark in a concentrated form, it is liable to aggravate and confirm all inflammatory affections. In fact, quinine, arsenic, and all other articles of the same class, are frequently entitled to the just reprehensions so freely bestowed on them by the disciples of Broussais. I shall make an attempt to establish the treatment of simple intermittent fever, in accordance with the views I have taken of the three distinct periods already noticed.

*Palliative treatment.*—So little is requisite to be done du-

ring the paroxysm, that I shall pass over this part of the subject with a very few observations.

Quinine has been recently recommended in the cold stage by one physician, and venesection by another. Dr. Mackintosh's plan of bleeding in this stage has gone the rounds of all the medical journals. It is not a little surprising that this practice should be vaunted as something new, when it has long ago been practised, and has been more clearly detailed by Dr. Potter in his notes to Dr. Gregory's Practice of Physic, than it has since been by Dr. Mackintosh himself. In plethoric habits it may be useful by unloading the central vessels, but it ought certainly, as Dr. Potter observes, "to be directed by a discriminating eye." In the hot stage of intermittents, in full habits, it is often highly necessary to reduce the violence of action, and thereby to favour the sweating process. With this, opium is the only remedial agent ever required; appropriately administered, either in the cold, hot, or imperfectly developed sweating stage, its effects will be highly gratifying. The dose should be very large, and administered all at once. During the cold stage its effects will be greatly enhanced by combining it with some warm vegetable infusion, and during the hot stage with large draughts of cold water. Thus administered, it almost immediately allays irritation, and produces an agreeable sweat.

*Curative.*—In the 19th number of this Journal I advocated strongly, the use of arsenic in this disease. The horror associated with the very name of this article, must ever militate against its general adoption, and prevent an experimental investigation of its virtues. Far better might it be totally laid aside for the destruction of rats, than to be approached with a faithless head and trembling hand. Suspicious of every symptom which arises during its use, the timorous practitioner apprehends and conjures up more dreadful consequences than ever arose from the contents of Pandora's box. But as far as I can judge, its most clamorous assailants are those who are most ignorant of its use. Since quinine has become so attainable, arsenic may, in general, be dispensed with in the treatment of intermittent fever.

In justice to the character of the paper alluded to, I must beg to offer, before dismissing the medicine, a few remarks relative to its *imaginary* and *real* effects.

Nothing is more common in medical experience, than for recoveries to occur during the use of an article which has no agency in the event. So nothing is more frequent among the profession than to impute a bad result to the medicine at the time in employ, although it have no agency in the occurrence. We see effects, but infer causes most suitable to our tenets.

*Imaginary effects.*—Eli Ganong of Putnam county, had a mild remittent fever, for the relief of which he took only a few laxatives, spts. nit. dil. and some simples of his own device. On the sixth day he found he could not move his hands or feet, and on examination they were found paralyzed. The paralysis gradually progressed up his legs and arms, and on the fourteenth day it reached the muscles of respiration, and death ensued from their insubordination to the will. Sensibility and his mental faculties were unaffected. For a satisfactory solution of this singular occurrence, a particle of arsenic would have been sufficient.

The wife of a neighbouring clergyman had a remittent fever, which soon became intermittent; she took no other medicine than emetics and full doses of calomel. During the hot stage of a paroxysm I let sixteen ounces of blood. After standing an hour, it manifested no appearance of coagulation, but remained a fluid, dark, muddy mass. The next morning I found her sunk, with clay-cold extremities and covered over with petechiæ, vibices, and large purple patches, induced by the oozing of the blood into the substance of the skin, or under the cuticle which was occasionally elevated by the dark purple fluid. On gazing on this appalling spectacle, it struck me forcibly how readily a little arsenic would explain the mysterious phenomenon. I might adduce numberless similar instances of these *nulli fecilii*, of almost every week's occurrence, to which arsenic would be a most convenient *father*. Hydrocephalus, dropsy, rheumatism, aphthæ, inflammations of the mucous membranes, liver, spleen, kidneys, bladder, &c. are frequently the effects of intermittent

fever, and yet every instance of the kind occurring under the use of arsenic, would be attributed to this article. We ought, therefore, to be cautious in deciding on the effects of a remedial agent, and make up our judgment, not from one, nor *several*, but from *many* cases.

*Real effects.*—It is said in Dr. Gregory's Practice of Physic, that "in moderate inflammatory cases and during the fit, it may be given when the bark cannot, without regard to cough, pain, or other local affections." I have administered it often in considerable pulmonary inflammations, without any other than a temporary aggravation. Ample experience has qualified me to confirm the statement, that inflammations of the viscera are less injured permanently by arsenic than by bark. Dr. Good says, "it is a medicine of real and inappreciable value in many diseases, and none more so than in intermitting fevers."

When quinine is unattainable, in the case of infants, and in protracted cases in which quinine has lost its effect by repetition, arsenic is often indispensable. I have twice cured quartan agues of two years' continuance by giving three grains the day preceding the expected paroxysm. These considerations being suggested, arsenic may claim an honourable discharge from a service in which it is capable of acting so conspicuous a part. Its use is contra-indicated by inflammation of the mucous membrane of the alimentary canal, evinced by soreness or pressure; and by a predisposition to hydrocephalus.

*Curative treatment.*—First period. Dr. Burns certainly fell into a great error when he concluded, "that although we may remove one action by inducing another, yet this cannot be done until the first has gone through all the essential stages to become perfect," for every practitioner knows, that in the formation of many diseases, there is a period in which it may be arrested, by instituting suddenly, a more vigorous action than that which constitutes the morbid process. This is most forcibly exemplified in the treatment of mild remittent fevers. To arrest them, I have frequently administered an emetic, followed by eighty drops of arsenical solution, in

twenty-four hours. The consequence was, that if thus treated within two or three days after the commencement of the premonitory symptoms, an immediate stop was put to the progress of the disease. A considerable vascular action was generally induced, but after the operation of the cathartic, which always concluded the course, the commotion subsided, and the disease vanished. This opportune period once lost, neither arsenic nor quinine were found admissible, frequently for weeks.

A very fatal fever prevailed in Bedford, in the vicinity of the Hon. John Jay, Esq., one of our ancient worthies. It was denominated *typhus*, a very convenient subterfuge for indolent practitioners; but its real character was that of a remittent fever, with a low contemporary inflammation of the mucous membrane of the intestines, lingering several weeks and terminating by diarrhœa, aphthæ, and death. Dr. Mead, who resides in that vicinity, found that eight or ten grs. of quinine given the first few days, accompanied by fomentations of the abdomen, arrested the disease at once: whereas the same course had been tried in the progress of the fever, and without any good effect, for its march to death, though slow, was uninterrupted. This preliminary digression being premised, I will now return to the consideration of intermittent fever.

Having already detailed some of the premonitory symptoms of this disease, it may be observed, that their continuance varies in different individuals, always preceding the establishment of the fever a sufficient length of time, however, for all remedial purposes. In general, after the second full-formed paroxysm the inflammatory diathesis is fully developed, and the formative period terminated. Previous to this the indication of cure is, to break up the morbid concatenation by full vomiting, followed by ten or fifteen grs. of quinine in the course of the twelve succeeding hours. These measures being adopted, both inflammation and habit are prevented; and if a cathartic be administered, and quietude, light diet, regular habits, &c. be enjoined, no relapse will ensue.

2nd Period. It is at this stage of the disease that so much injury is frequently done by the injudicious use of tonics, in-

cluding the whole class from *alpha* to *omega*. Hence the old custom of waiting the occurrence of a certain number of paroxysms, before the administration of bark was not so gross an error; hence, also, the reason why in certain sections of the country such prejudices prevail against all attempts to stop their progress. They may, however, be arrested at any time with safety, during this period, provided the patient submit to a consequent course of antiphlogistic treatment, and such other measures as circumstances may require. But such is the effect of general theory, both popular and medical, that patients discontinue all means, vainly imagining themselves cured; or what is still worse, they adopt the very reverse of propriety, that of tonics to prevent a relapse, which is the most effectual means to counteract their design.

During the inflammatory period, that is as long as any symptoms of local or general sthenia remain, indicated by a coated tongue, &c. without any regard to length of time, the physician has the choice of two courses, which is frequently a perplexing trial. He can arrest the paroxysms at once, and remove the inflammatory diathesis afterwards; or he may first subdue this diathesis, and subsequently interrupt the paroxysms. From a long and careful observation of the effects of the two courses of procedure, I am well convinced of the superiority of the latter in general. Each however claims notice; and first: Many circumstances render it necessary to put an immediate stop to the paroxysms. It is well known that people in advanced life do sometimes die from the violence of the cold, or from apoplexy during the hot stage; whenever, therefore, such an event is apprehended, quinine should be instantly resorted to. From ten to fifteen grains may be divided into three parts, and the whole may be administered in the course of the six hours preceding the expected paroxysm.

Infants and some adults are peculiarly liable to spasms during the cold stage, and epilepsy attends every paroxysm, from which death sometimes results; and whether this event is expected or not, the recurrence of epilepsy tends to create a habit or induce some structural derangement, by which they

will be perpetuated; hence a period should be put to the agues at once by quinine in large doses.

Females who have contracted a habit of abortion, persons with recent fracture, those who suffer extremely from the repetition of ague fits, and all whose business render it necessary, or whose wishes demand it, may have them arrested at once by quinine or arsenic. But those who have them thus broken up should remember that they are not cured, and that the utmost care on their part, and circumspection on the physician's, are necessary, or relapse is certain. Instead of tonics, opening medicines, as calomel followed by cathartics, light diet, and absolute rest, must be strictly enjoined. By these and such other means as circumstances may indicate, a permanent cure may be easily and comfortably obtained.

2d. We frequently meet with subjects of this disease, in whom rigidity of fibre, plethora, or a local or general sthenic diathesis is evident; in such cases, and in all others in whom such a disposition is suspected, I am convinced of the inexpediency of administering quinine or arsenic, until these obstacles are removed. I have often heard patients, after having had several relapses, say they did not feel right, or as they used to do, until after they were cured the last time.

It is unnecessary to enter into a detail of the means of removing inflammation, congestion, &c. Bleeding, calomel, purging, or blistering, low diet, &c. will readily suggest themselves to the practitioner. These preparatory measures, as they are usually though rather improperly called, should be persisted in, until the end for which they were designed is fully obtained, that is, if we wish to make cures and avoid after-consequences. It was the injudicious use of tonics at this period, that led M. Broussais to condemn their employment in such severe and unqualified terms of reprobation; and it was the same cause which engendered the popular prejudice against all plans of cure by medicine, and created the opinion *that ague and fever is a wholesome disease.* Uuder this head, I shall mention a singular but quite successful method of treatment which obtains in some country places. It consists in giving up all business, and living solely on a diet of skimmed milk and

roasted apples. The water practice is of the same cast, by which patients are directed to be kept exclusively on water three or four days, no food whatever being admitted. The inflammatory conditions, congestions, &c. being removed, it brings me to the

3d *Period.* It is this period that affords the most pleasure to the physician, and satisfaction to the patient. In fact, after a proper course of deobstruents and cooling treatment, one half of the ordinary intermittents will terminate spontaneously, or by the most simple means; hence the origin of another country practice, for which some have obtained the appellation of fever and ague doctors. They inquire into the number of fits a person has had, and then cutting as many niches into a stick as will make the number nine or twelve, they deliver it to the patient, who puts it into his pocket, and when the number of fits corresponding to the marks has endured, his faith often cures him.

The indication of cure, at this period, is also twofold: 1st. To make an impression on the system more powerful than that which constitutes the disease; and 2d. To restore vigour, and thereby to enable the natural to supplant the morbid action. Here again the practitioner has an opportunity of choosing his course of proceeding, for either will cure the disease. The former leaves the most favourable impression on the patient's mind, but I am strongly inclined to believe the latter leaves quite as beneficial a one on the system.

The first is that of true counter-irritation, or of overcoming one action by inducing another. In the present instance it is to be accomplished by making a sudden impression on the system by quinine, given in such a manner as to have the full influence of the medicine at the time the chill is forming. It has been recently ascertained, that a quantity of quinine sufficient to arrest the disease, may be administered during the cold stage, and the object be still accomplished. This mode of exhibiting the medicine certainly possesses no superiority whatever, and it must evidently be more comfortable to take it a few hours sooner than to wait for the disquietude, pain, and confusion of an ague. It is of material con-

sequence that the quinine should be given wholly within a few hours of the recurrence of the paroxysm, otherwise the impression will subside before the morbid action commences, and a failure will be the consequence. In such a case the quantity of quinine must be increased; for the susceptibility to the impression of the agent will diminish with its use, and it will finally fail totally to arrest the disease, although triple the quantity at first sufficient, be administered. This feeble practice has brought many valuable medicines into disrepute, which is especially true of arsenic. To begin with three or four drops, as directed by Dr. Armstrong, who lets blood by the gallon, and increase the dose until a cure is effected, is the most effective method to obtain all its injurious, and lose all its beneficial effects. Whoever has temerity enough to use this article, will find that 80 or 100 drops of the solution, given in divided doses during the twenty-four hours previous to the paroxysms, will invariably arrest the disease, and a cathartic exhibited within twelve hours of the last dose, will as invariably prevent any bad consequences.

Not willing to rest the assertion that large doses of arsenic are preferable in intermittent fever to small ones, on my own experience, I must beg to adduce the authority of Dr. Mitchell of Philadelphia. He says, "Dr. Eberle never observed any injurious effects to follow its exhibition. It appears therefore, from the statement of this physician, that where arsenic is indicated, it ought to be given in as large doses as the stomach will bear, it being much more promptly efficacious, and not more detrimental to the general habit, when thus administered, than when given in smaller doses."

The disease being thus arrested, some mild unirritating tonic, as the bitter vegetable infusions, may be administered, and absolute rest enjoined.

2d. *By restoring tone.*—The above method cannot be said to accomplish the end by advancing tonicity. It is absurd in the extreme to pretend that quinine administered in the manner detailed, arrests the disease by virtue of its tonic power. The fact of its being successfully exhibited wholly in the cold stage, must render such an opinion ridiculous. When we

attempt a cure on the tonic plan, or that of bracing the living fibre, and thereby fortifying the natural actions, we should begin with quinine in small doses, combined with some tonic bitter in the form of tincture, or in a solution in water acidulated with a little sulphuric acid.

As a general tonic, however, the bark in substance is said to be superior to its quinine. An ounce suspended in a pint of wine with some aromatic, is a good tonic, given in doses of an ounce three times a day. In full habits in which there is a paucity of the red globules of the blood, iron, in the form of phosphate or prussiate, will contribute materially to a cure.

*Treatment of complicated Intermittents.*—Intermittent fever is liable to be complicated with such a variety of affections, either primarily or consecutively, that to enter into a detail of all would far exceed my limits. The most prominent of these may be noticed.

1st. *Hepatic derangements.*—These may be inferred from a yellow slimy furred tongue, a pale or yellow cast of countenance, with a tumid abdomen and irregular bowels. This condition may be relieved by small doses of calomel, followed by purges of neutral salts. This plan is to be pursued until the skin and tongue assume a more healthy aspect, and the abdomen become soft, when the quinine or bark will complete the cure.

2d. *Dropsy.*—This being in general the effect of visceral obstructions, these must be removed before a cure can be effected. Small doses of calomel, succeeded by copious purging, will be found useful.

3d. The most obstinate and fatal of all combinations are those organic affections of the uterine system and the accidents of child-bed, suppression of the lochia from cold, retention of pieces of placenta, &c. These require great skill and experience on the part of the practitioner.

4th. *General laxity of fibre.*—These require ammonia, capsicum, wine, iron, &c. to be combined with the bark or quinine as circumstances may indicate.

5th. *Excessive sweats.*—These have been generally viewed

as consequent on debility, and this is frequently true when they succeed the disease; but when they accompany it, they are more generally indicative of hepatic derangement, causing imperfect intermissions, in consequence of which the sweating stage is prolonged during the whole apyrexia. I have found small doses of tart. antimonii, given every hour in the afternoon, with six grains of calomel at bed-time and a dose of Epsom salts in the morning following, speedily to arrest the sweating, and subdue the fever connected with this condition.

Many other articles are reputed to be used successfully in the treatment of this disease, a few of which may demand notice.

1st. *Prussiate of iron.*—Dr. Zollikoffer, a few years since, introduced this article into practice, and Dr. Hosack confirmed its character in a letter published in this Journal. Experience has proved it to be a very uncertain remedy in the generality of cases, and it is now nearly laid aside; probably, however, for the want of appropriate indications for its use.

2d. *Piperine.*—Extract of black pepper. This article has been highly extolled by many writers, but I suspect by few practitioners; for I have found it generally to fail, although it heats remarkably the stomach and fauces. It must be recollected, that the virtue of a medicine is not in a ratio to its sensible qualities. I am satisfied it is unworthy any confidence in this disease.

3d. *Sulphur.*—Dr. Chapman says, ℥ij. of sulphur in a gill of brandy, administered half an hour before an expected ague, effectually prevents its recurrence. This I have sometimes found true. Yet the same quantity of sulphur given in a glass of port wine is quite as effectual, and is a much more tolerable dose.

4th. *Cobweb.*—This is certainly deserving more respect than it has generally commanded, yet ridicule will always keep it in the back ground.

5th. *Charcoal.*—In cases accompanied with fetid breath, putrid or acid evacuations, costiveness, and symptoms of in-

testinal or gastric functional derangement, this is an invaluable article; being the most effectual means of counteracting this obstacle to recovery. A cure frequently follows its use.

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ART. VII *A Treatise on Semeiology, translated and abridged from the French of F. T. Double, M. D.; with Notes and Additions.* By E. G. LUDLOW, M. D.

SEMEIOLOGY, or Semeiotica, is an ancient division of Pathology, for which, in modern nosological systems, the term Symptomatology is substituted. It is the science of symptoms and their value in diseases, embracing those which have occurred, which now exist, or which may be anticipated. In all the branches of science which are advanced by a close observation of nature, we are more indebted to ancient than modern research; less engaged in the formation of futile systems and hypotheses, or embarrassed by the accumulated contradictions of ages, the Hippocratic school patiently interrogated nature, which, unshackled, appeared to render a willing response. The present is pregnant with the future, and all diseases have a determined course, and a physiognomy which is apparent to the semeiologist, who discovers it amid every variety of modification. Among the older cultivators of this branch of medical science, are Hippocrates, Avicenna, Baglivi, Sydenham, and Hoffman; among those of a more recent date, Dr. Hall of Edinburgh is most conspicuous—his work on diagnosis being a complete manual of the art.

In 1811, Dr. Double, at present one of the most eminent physicians of Paris, published his 1st volume of Semeiology. Owing to an extensive practice, and the political state of France, the 2nd did not appear until 1817; the 3d and last is either recently published, or is now in the press.

From the extended view the author has taken of his subject, I shall necessarily be obliged to restrict myself to the practical part of his works, to which it is my intention to

make such notes and additions as my limited knowledge may furnish.

*On the art of examining and interrogating Patients.*—The exercise of this art, renders the physician completely master of all the important facts of the case, and disengages him from all superfluous detail. It is the base of all correct observation and good practice, and conducts us in the most prompt and sure manner, to the discovery of the true character of disease; the kind and degree of danger we have to fear; and the aggregate of hope we may entertain, and thus enables us to establish those indications of cure which naturally flow from such knowledge. To acquire this, erudition and long practice should be united to patient research and profound meditation; for it is necessary to have learnt much, before we know how to ask for that of which we are ignorant. In proportion, also, to the method pursued in examination, and the pains taken to investigate disease, will be the confidence of the patient in the physician; for the first feeling the sick exact, is an interest in their situation.

The art of examining and interrogating patients, divides itself, naturally, into two distinct parts:—the 1st should embrace the knowledge of those symptoms which have preceded the malady:—the 2nd comprehends those which essentially appertain to it. The practitioner should study the climate of the country which he inhabits, the quality of its waters, the prevalent winds, the changes of the seasons, the reigning epidemics, and the known successful treatment of the same.

Furnished with this preliminary knowledge, he arrives at the house of his patient, previous to seeing whom he should inform himself, through the parents or friends, 1st. of the age; 2nd. of sex; 3rd. profession; 4th. passions; 5th. habits and mode of life; 6th. condition of the functions in health; 7th. state of health previous to the invasion of disease; 8th. diseases of the parents and family; 9th. those by which he has been attacked from his birth; 10th. the general effect of medicines on the constitution, and the particular impression

on the patient, produced by blood-letting, emetics, cathartics, narcotics, &c. By this method the physician avoids fatiguing the patient by questions, and by his previous knowledge appears to anticipate a portion of his sufferings, and thus increases his confidence in him, which is equally as important in the cure of diseases, as the action of medicine. This is confirmed by the fact, that physicians are most successful with their intimates. "I have but little faith in the medicines of physicians, but much in that of friends," was a saying of Rousseau.

An unavoidable impression being always produced on the patient by the entrance of the practitioner, he should not immediately feel the pulse, but commence his inquiries by ascertaining the precise time of the invasion of the disease; this being indispensable to the calculation of crises and critical days; also, the condition of the patient immediately preceding the invasion, for often the character of the malady is in this way developed. Likewise, whether this is the first time the patient has been attacked with the present disease; and if not, what was its course in the preceding attack, the means employed and the manner of its termination; next, the nature of the symptoms each day since the invasion of the malady; their intensity; the kind and quantity of the evacuations which have taken place; the regimen; the medicines employed and their effects. He should also hear with calmness and without interruption the patient's history of his case, having the room sufficiently light to observe his features, his position in bed, his strength or debility, and the regularity or irregularity of his movements; which includes all signs furnished by the exterior of the body.

The attention of the physician should be now directed to the functions of the external senses, in reference to their actual state compared with their condition in health; next, the respiration, under which should be comprised all its modifications, as those of oppression, frequency, &c.; also, the different acts dependent on it, as gaping, sighing, hiccough, cough, and the alterations of the voice and speech. After respiration, the circulation may be considered as next in relative im-

portance. Too much stress is in general laid on the state of the radial arteries, because they are the most sensible; but the pulsation of arteries often vary from a variety of causes, not only on both sides of the body, but often at different points on one and the same side. Thus the beat of the two radial arteries often differ, owing to natural or accidental causes, as ossification, injury, &c. The carotid and temporal arteries often do not coincide with the radial. I therefore advise an examination of the circulation at different points of the system, and particularly the heart itself. I am much surprised that the centre of the circulation is neglected, while such importance is attached to its branches, for by the irregularity of its pulsations we frequently detect organic diseases.

The third division in my order of examination is digestion, including the acts of deglutition and nutrition as perfectly or imperfectly performed, and the assimilative function, as obesity or emaciation. The organs of generation in relation to their functions are next worthy of attention, as being frequently connected with many acute and chronic diseases. After the examination of the functions, the vital powers are to be considered, as sensibility, irritability, and the intellectual faculties, with reference to their diminution and augmentation, and those general and symptomatic affections which are their results. The nature and condition of the different secretions complete the examination of the patient.

I will suggest a precept which is too important to be omitted—that practitioners should visit their patients each day at a different hour; the phenomena of the disease are thus apparent to them, and they are enabled to correct errors in their practice, which are otherwise unavoidable.

To many the method I recommend may appear tedious, but the time we employ in interrogating nature, is never lost.

*On the formation of Symptoms.*—There exists between the external character of objects and their internal qualities, such a connexion, that we always judge of the nature of a body by its exterior—it is the same in medicine—there exists an analogous dependence between the symptoms and nature of

maladies, with this difference, that it is not a simple conformity, but the dependence of cause and effect. Thus symptoms, when properly investigated, never fail to acquaint us with the disease and the causes with which it is connected, the degree of hope and fear we may indulge, and the proper treatment we ought to pursue. The knowledge of symptoms is then what we first learn in the study of diseases, and by uniting one symptom with another, and comparing them together we soon form deductions, and from these consequences and conclusions. These conclusions relate, 1st. To the knowledge of the disease, or its nature—these are the diagnostic symptoms. 2d. To the knowledge of the probable events which ought to follow—these are the prognostic symptoms. To arrive at these different results, analysis is the only course to follow. It is necessary, at first, among the assemblage of symptoms that we have gathered, to separate those which are accidental from those which essentially appertain to the disease; and particularly those which depend on idiosyncrasy, or on some extraordinary or insulated circumstance: also, those general symptoms which occur in all diseases, and which, consequently, do not belong to any in particular. It becomes apparent, therefore, that it is indispensable to have a profound knowledge of the history of maladies, and that the study of nosology and pathology must precede all clinical practice; for we must learn diseases by their proper symptoms before we can predict their results. We should endeavour to discover, among the assemblage of symptoms, whether the disease is simple or complicated; and if the latter, the nature of the complication, and the degree of consideration it merits in the treatment. Complications sometimes exercise in disease a great influence, and it is always important to reduce a complicated disease to a simple one.

*On Symptoms derived from the external appearance of the patient.*—Among the symptoms which the different external parts of the body present, and the numerous modifications of which they are susceptible in diseases, there are some which relate to the external character of the body in general, and others to its different parts. The symptoms furnished by

these two sources are equally important, but I will confine myself, primarily, to the consideration of the former.

*On Symptoms derived from the attitude of the Patient.*— The first thing which strikes the physician when he sees his patient is, his attitude, whether lying or sitting up: in general the latter is a good sign, especially if in a natural manner, as it shows his muscular strength. But it is necessary to consider, what is the nature and character of the disease which obliges him to keep his bed in order to prognosticate the danger. Thus, for example, in convulsive asthma, in the advanced stage of hydrothorax and phthisis, the patient cannot lie down; he is always sitting on his bed or in a chair. I have always seen these patients die out of bed. Those patients who bend their bodies forcibly towards their thighs, forming a curve, indicate severe pain in the spine, diaphragm, or abdominal region. In all affections of the head, patients with difficulty keep an horizontal position, preferring to sit.* In acute diseases in general, and particularly in peripneumony and pleurisy in their advanced stages, it is a bad sign when the patient wishes to walk or to sit up in his bed; effusion in the chest is to be feared, or it is an evidence of great debility of the respiratory muscles.

It argues a great prostration of strength and often approaching death, if the patient lies on his back, especially if his arms and legs are widely separated; the same if he lies across the bed, with his hands or feet hanging out of it: also, in acute diseases, when the patient sinks towards the foot of the bed, notwithstanding every exertion made to keep him up. There are however, these exceptions, that it occurs without being indicative of danger in infants, and in paralytic and rheumatic affections. When the patient lies on his belly, it indicates either the colic or approaching delirium. It is an erroneous idea, that patients with inflammation or congestion of the viscera, of the chest or abdomen, always lie either on the

* In symptomatic diseases of the head, the contrary disposition exists.

side affected or on the other, for both of these opinions have prevailed. Autopsic examinations have convinced me, that no importance is to be attached to this symptom, for many organic lesions allow of every diversity of position.* When serous, sanguineous, or purulent effusion has taken place, the patient lies on the side where the effusion is formed; and if it exists in both sides, the patient lies on his back, or sits up in bed if the effusion is considerable. When he often changes his position or is uneasy in bed, or sometimes lies down and then rises, or without cause wishes to get out of bed, it is indicative of extreme irritability, external or internal inflammation, or approaching eruption, as small-pox, critical hemorrhage, or death.

*Symptoms derived from the external appearance of the body in general.*—The external appearance of the body embraces, 1st. Its stature; 2d. Its size.

*The stature.*—The increase of the body, considered even in the regular course of nature, predisposes to many maladies; as fevers, diseases of the joints, enlargement of glands, nasal hemorrhage, and derangements of the organs of digestion, &c. A middling stature is the most conducive to health. Individuals who are very short in proportion to the strength of their constitutions, are subject to asthma and apoplexy. Those who are tall and thin, to general debility, and diseases of the organs of respiration. A rapid growth of the body is unfavourable, when it takes place during or after convalescence from an acute disease, or during the course of intermittent fevers or chronic affections.

*Size of the body.*—Under this head, I will treat of obesity and emaciation.

*Obesity.*—This state of the body may be regarded as a disease which singularly disposes to many affections, and

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* It is almost invariably the case in pleuritis, that the patient lies on the side unaffected, and in diseases of the liver the reverse. In complicated or chronic affections, the attitude can never be diagnostic.

aggravates those which exist. Individuals who are very fat, are deprived wholly or in part of freedom of movement; their functions are preformed slowly and with difficulty; their lives appear to be incomplete—they grow old sooner than those who are thin, and are subject to apoplexy, vertigo, angina pectoris, hydrothorax, &c.

It is a bad symptom during many diseases, when the size remains the same as in health, and is not diminished in proportion to the weight and duration of the malady. In these cases, we have to fear either a fatal result or protracted recovery. It is a favourable sign, when maniacs and hypochondriacs become fat in proportion as their mental alienation diminishes; but if the disease remain the same, they may be considered incurable.

*Emaciation of the body.*—A spare habit, joined to good health, is without doubt the most favourable for the free exercise of the functions of the animal economy and the intellectual faculties; but where there is emaciation, especially if connected with indifferent health, the existence of disease in the digestive organ may be suspected. Emaciation may, however, be the natural effects of acute pain, prolonged watching, excessive labour, great abstinence, the abuse of spirituous liquours, and protracted disease. An attack of serious disease may be apprehended, when emaciation supervenes without sufficient cause or a known reason. In pregnant women, extreme and rapid emaciation without apparent cause, is indicative of tedious labour or abortion. In the commencement of all acute diseases, it a bad symptom when the patient grows thin too fast, that is to say, when the emaciation is disproportionate to the progress of the malady—it indicates great debility or complication. The progressive emaciation in consumption, hectic fever, or large abscesses, is usually a mortal symptom. The wasting of the whole body in ascites, especially if the abdomen is enlarged by serous effusion, is unfavourable. Also, if prolonged after an attack of acute disease, it is indicative of hectic fever, or threatening consumption. In these cases, there probably exists congestion, or violent irritation of some organ. In

convalescence, generally, if the patient continues thin, although he eats heartily, a relapse may be anticipated.

*Tumefaction of the body.*—The general tumefaction of the body may be inflammatory, edematous, or emphysematous. The first occurs in ardent fevers, the phlegmasia, and in extensive eruptions. In general, the greater the tumefaction, the more intense the disease; but when this symptom is connected with the nature of the malady and is regular in its progression, it is of no consequence. If the tumefaction ceases suddenly, before the crisis of the disease, it is indicative of its protraction, delirium, or death. If it continues after a crisis more or less favourable, it is an evidence that the disease is not completely removed, and a relapse may be expected. This tumefaction, favourable in all great eruptions, is especially so in the small-pox, when it progresses regularly from the period of invasion, to that of desquamation—affecting every part of the body from the head to the foot; but it is an unfavourable symptom, when the tumefaction is prolonged beyond this period—anasarca or ascites is to be apprehended. Also, when the enlargement continues in one part when it has ceased in others, the formation of abscesses is to be feared. Previous and during an attack of sanguineous apoplexy, the body has an inflammatory intumescence, most apparent in the face, but often so over the whole body. Edematous tumefaction of the body occurs after intermittent fevers, especially quartans, during the course of chronic diseases and in intemperate persons.

*Edema* is, under some circumstances, the effect of the suppression of some habitual evacuation which has become necessary, or of an eruptive disease; in these cases it is an unfavourable symptom, and is only removed by the restoration of the discharge, or the return of the eruption. When it occurs during pregnancy, it equally disappears after the period of confinement. If it continues afterwards, congestion of some of the viscera, asthma, or organic disease of the heart is to be apprehended. General edema often terminates spontaneously, after abundant perspiration, copious urinary discharges, or diarrhea. Partial edema occasionally terminates

in scirrhous enlargements. Scarlet fever is frequently followed by edema, which shows itself about the ninth or tenth day, and the disease often terminates in serous effusion in the chest or abdomen. Previous to an attack of serous apoplexy, the body often presents an edematous appearance. In aggravated scorbutic diseases, edema is always an unfavourable, and frequently a mortal symptom.

*Emphysema* occurs after severe wounds—especially those which penetrate the chest, and during the course of certain phlegmasiæ, whether acute or chronic. It is sometimes complicated with dropsy, and is a termination of intermittent fevers. In all these cases, this symptom ought to have but little weight in forming a prognosis.

*Symptoms drawn from the general state of the skin.*—The principal alterations of the skin which furnish useful materials to the semeiologist, are relative, 1st. Its colour; 2d. Its temperature; 3d. Its humidity or dryness; 4th. Its inequalities.

*Colour of the skin.*—A deep red colour of the skin is a symptom of inflammation, or at least violent irritation, unless habitual to the individual. If the redness is confined to some part of the body, with tumefaction and itching, this part is likely to be the seat of erysipelas. If, during an eruptive disease, or an inflammation, the redness suddenly subsides without an apparent cause, it is a very bad sign; it indicates extreme prostration, an internal metastasis, or even approaching gangrene in the part inflamed. In acute diseases, extreme paleness of the skin is a bad sign, unless it has progressively increased with the different periods of the disease, and is in a measure removed as convalescence approaches; if otherwise, a relapse, or a chronic affection is to be feared. The skin is pale in the commencement of acute and chronic inflammations of the viscera, afterwards it becomes of an olive tint—when in acute diseases the pallor of the skin changes to lividity, it is a very bad omen; the disease will then become putrid or malignant. If one of these states exist, and the disease goes on increasing, death is certainly very near. A livid colour of the skin frequently is observed in large abscesses

of the liver; also, after the exhibition of certain poisons, and especially in pestilential diseases, when death is at hand. It is also a fatal symptom in dropsies, particularly so in ascites, and frequently occurs in the last stage of scurvy. A yellow colour of the skin is characteristic of icterus. This disease is either idiopathic or symptomatic. I shall confine myself to the latter, as more immediately connected with the science of prognosis. Symptomatic icterus is an unfavourable symptom in acute diseases if it occurs before a crisis, and the contrary if it occurs at that period, and is unconnected with disease of the liver. Icterus frequently occurs after violent colics. In acute or chronic inflammations of the liver, the yellow colour of the skin has no other signification than what is relative to the violence of the disease; with which it is generally commensurate, the same in the violent bilious fevers of warm climates. When the skin is of a greenish colour in icterus, and afterwards becomes a bright yellow, it is an evidence of the subsidence of the disease. In elderly persons, a dark colour of the skin frequently occurs, consequent to an attack of intermittent fever, especially quartans. In these cases, consumption is to be feared. If the skin frequently changes its colour in acute diseases, it is either a fatal symptom, or indicates a tedious recovery. In all cases, great derangement of the nervous symptom exists.

*Temperature of the skin.*—Many accidental circumstances cause a variation in the heat of the human body, entirely unconnected with disease, as atmospheric temperature, clothing, exercise, the process of digestion, and the abuse of spirituous liquors. Those variations which ought to be considered morbid, are preceded, accompanied, or followed by correspondent symptoms. An augmentation of the natural heat of the skin is one of the signs of fever and inflammation, and generally of a state of great excitement. An inequality of temperature in the different parts of the body, is always an unfavourable symptom, especially in fevers of a typhoid nature. In phthisis, an increased heat in one cheek, hand, or foot, indicates that the lung on the correspondent side, is the

principal seat of the disease.* If the external surface is cold, while the patient complains of burning heat internally, it denotes an inflammation of some of the viscera, and is always dangerous. When a part of the body is preternaturally cold or hot in the commencement of disease, it indicates that it will be the principal seat of the disease.

*Humidity and dryness of the skin.*—A very moist skin indicates debility, and is a bad symptom in the invasion of disease, especially if it be of long continuance. In comsumptive patients, it is soon followed by night-sweats, which are the precursors of death. An equable moisture of the skin, followed by sensible ease, often precedes favourable crises. Great dryness of the skin in the invasion of acute diseases, is symptomatic of inflammatory or high bilious fever; if this state continues after their termination, or during the course of a chronic disease, hectic fever or consumption is to be feared. Aridity of the skin is generally present in a disease, during its period of irritation, and when this continues without intermission, we may be confident that a crisis is not at hand. Sometimes, however, after this state of skin is followed by moisture, and dryness again succeeds, then a crisis is near, and the dryness of the skin will not long continue.

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* This partial flushing, especially observant on the cheeks of consumptive patients, is never confined to one side of the face, but varies continually.

[*To be continued.*]

# REVIEW.

ART. I. *Transactions of the American Philosophical Society.* Philadelphia. 8 Vols. quarto.

[Concluded from page 426.]

WE resume, at this time, our analysis of the medical papers contained in these volumes; and in following the order previously laid down, we come next to those included under the head of

## *THE PRACTICE OF PHYSIC.*

These consist of ten papers; some of which relate to Pathology and the Treatment of Diseases, while the remainder notice what are commonly styled, the *Remote Causes* of Epidemics and Endemics.

1. *The Case of a Tetanus and Locked-Jaw, cured by amazing quantities of opium.* By Dr. ARCHIBALD GLOSTER of St John's, Antigua. Communicated by Professor MORGAN. Vol. I. p. 379.

2. *Observations on the Causes and Cure of the Tetanus.* By BENJAMIN RUSH, M. D. Professor of Chemistry in the University of Pennsylvania. Read March 17, 1786. Vol. II. p. 225.

The subject of Dr. Gloster's case was a negro, aged forty years, who, after having suffered the excessive heat of the sun

during the day, laid himself down and slept on the damp ground in the night. He awoke with a stiffness in the muscles of the jaws, and the disease rapidly proceeded to its most exquisite state.

Having observed, in the *London Medical Essays*, that this complaint had been successfully treated with large quantities of opium, and having premised venesection and gentle purgatives without effect, Dr. Gloster was induced to try that remedy.

He commenced with five grains, united with nitre and camphor, and administered every three hours—and the next day increased it to seven grains. No effect was produced—neither sleep nor disturbance of mind. A warm bath was ordered, and a linament applied over the surface. The quantity of opium was gradually augmented, until twenty grains were given every three hours. This, on the eighth day after the accession of the disease, caused a diminution of the spasms, but no perceptible relaxation of the muscles of the jaw. Enemas, linaments, friction, and baths were faithfully used. The symptoms gradually moderated, and the opium was continued (with cinnabar and musk) in reduced doses, but still in considerable quantity—so that at the end of seventeen days, he had taken *fifteen hundred grains*. Spasms occasionally recurred for some weeks after, but they were removed by the use of this remedy.

Dr. Rush, on the other hand, who had seen several cases, both in the United States' Military Hospitals and in private practice, never succeeded in a single instance with opium. This led him to inquire into the nature of the disease, and finding it one of warm climates and warm seasons, he was induced to ascribe it to relaxation. He determined to treat it on this principle; and being shortly after called to visit Colonel John Stone, who was wounded in the foot at the battle of Germantown, found him "in the third day of a tetanus." His spasms were violent and exquisitely painful—his head was thrown backwards, and his jaw had become stiff and contracted. He was taking opium in large quantities. Dr. Rush discontinued its use, and gave him wine and bark in large

quantities, to the amount of two or three ounces of the latter, and from a bottle to three pints of the former during the day. In a few hours, the spasms became less violent and frequent, and he slept for a short time. A blister was now applied between the shoulders, and mercurial ointment rubbed upon the outside of the throat. He rapidly improved under this treatment, and in ten days was out of danger.

In a case in private practice, which originated from sleeping on the damp pavement, the same medicine proved highly useful. Oil of amber in large doses, was substituted with great success, when the tonic powers of the bark and wine began to lose their effects.

In a third case, from a wound with a nail, Dr. Rush dilated the torn part and filled it with lint, dipped *in spirits of turpentine.* This produced pain and inflammation in the foot, but on the next day, when about to administer bark and wine, the pains and spasms suddenly left him, and in twenty-four hours, he complained of nothing but soreness and swelling in the part, which continued for several weeks, and finally ended in suppuration.

In confirmation of his opinion, that this disease originates from relaxation, Dr. Rush observes, that it is generally produced by heat: watchings, marches, fatigue, also excite it; and wounds more certainly induce it, "if they have been preceded for some time with warm weather. Dr. Shoepft, the physician general of the Anspach troops, that served at the siege of York in 1781, informed me of a singular fact upon this subject. Upon conversing with the French surgeons after the capitulation, he was informed by them, that the troops who arrived just before the siege from the West Indies, with Count De Grasse, were the only troops belonging to their nation that suffered from the tetanus. There was not a single instance of that disorder among the troops who had spent a winter in Rhode Island."

We pass over the *ratio medendi* of Dr. Rush, in which he accounts for the utility of bark and wine, on the ground that the disease requires stimulating remedies. If opium succeeds, it does so, only, he observes, in large doses; and here,

probably, its sedative effects are lost in its stimulating. But he prefers the others to it, being more direct in the operation, and not so apt to induce dangerous consequences. On one point his advice cannot be too much prized—namely, the necessity of inducing local inflammation in the injured part at an early period.

Animals are subject to tetanus. Dr. Rush saw several instances in horses, from running nails into their feet and other accidents. The muscles of the neck became rigid, the jaw was locked, and the limbs stiff. Although it generally proved fatal; yet our author saw two cases cured by applying the potential cautery to the neck under the mane; by large doses of oil of amber; and by plunging one of them into the river, and throwing buckets of cold water over the other.

Dr. Rush had seen three cases of *trismus nascentium* in his practice. Dr. Cadwallader Evans, who had resided several years in the island of Jamaica, witnessed many cases, which all proved incurable, until he began to purge every child born on the estate committed to his care. He was induced to do so from an opinion that it originated in a retention of the meconium, and the result of this precautionary treatment was, that he never afterwards met with a case among children.*

3. *An Enquiry into the nature, cause, and cure of the Angina Suffocation, or Sore Throat Distemper, as it is commonly called by the inhabitants of the city and colony of New-York, &c.* By Samuel Bard, M. D. and Professor of the Practice of Physic, in King's College, New-York. Communicated to John Morgan, M.D. F.R.S. Professor. Vol. I. p. 388.

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* We have been particularly struck with the necessity of occasionally recurring to *the original writings* on medical subjects, from looking into a learned and systematic work, and which is generally very accurate on the disease above noticed. In the *Study of Medicine*, (Vol. III. p. 226, Boston edition, 1823,) Dr. Gloster is said to have given only *five hundred grains* in seventeen days. Dr. Good, also, in the same page, quotes Dr. Talman in the Amer. Phil. Transactions, Vol. I. as having tried the cold bath with success. Now there is no paper by Dr. Talman in any of the volumes—nor can we find his name mentioned.

4. ***The Antiseptic Virtues of Vegetable Acid and Marine Salt combined, in various disorders accompanied with putridity.*** Communicated in a letter to JOHN MORGAN, M.D. F.R.S. By WILLIAM WRIGHT, M.D. of Trelawney, in Jamaica. Vol. I. p. 284.

"Take of lime-juice or lemon-juice three ounces; of marine salt as much as the acid will dissolve, of any simple distilled cordial water one pint, and of loaf sugar, a sufficient quantity to sweeten it. The dose of this mixture must be proportioned to the age, sex, and violence of the disease. A wine glassful may be given to adults every two, four, or six hours."

Dr. Wright, (with whose name the writings of Dr. Currie have made us familiar) found this preparation eminently useful. In *dysentery*, after gentle purgatives, it corrected the frequency of the stools, gripes, and tenesmus, and restored the strength and appetite. In *remittent fever*, particularly when diarrhœa was present. Here Dr. Wright never found the bark of service, but the mixture relieved the bowels, and at the same time often removed the fever. In *the belly-ache*, with inflammatory symptoms, after the use of venesection, repeated doses of castor oil, fomentations, and enemas. The patients, notwithstanding these remedies, would continue suffering under pain with liquid, fetid stools, cold sweats, and furred tongue. The stomach also was sickened. In this dangerous situation, bark had sometimes proved useful, but of late, Dr. Wright had solely used the antiseptic mixture. The stools became less frequent and more healthy, the cold sweats disappeared, and the appetite returned. Lastly—*in the putrid sore throat*, which was epidemic in 1770. "Antimonial wine, with cordials and nourishing diet succeeded best, till the sloughs or spots were removed and separated; then the bark completed the cure. When a diarrhœa accompanied the disorder, I gave the mixture with success."

In all disorders where a gargle is necessary, Dr. Wright gave the mixture in preference to any other.

Where lemons or limes cannot be had, vinegar or cremor tartar may be substituted in their room.

5. *Memoir on the Analysis of the Black Vomit.* By Dr. Isaac Cathrall. Read June 20, 1800. Vol. V. p. 117.

Dr. Cathrall concludes his Memoir with noticing the opinions of authors concerning the black vomit. They may be classed, he observes, as follows:

1. *That it consists of putrid bile.*—This opinion appears to have been adopted merely from its being found on dissection, in the gall bladder. The properties of each are, however, very dissimilar. The black flaky substance, which is the only part bearing the least analogy to bile, is generally of a darker colour and a thicker consistence. It imparts a black or brown tinge to linen, whereas bile, even when putrid, gives a yellow colour. Again—Experiments with each give various results. Sulphuric acid converts the flaky substance into a fatty matter, while putrid bile is dissolved into a blackish green liquor. The specific gravity of the former is 1.025, that of the latter is 0.125.

2. *That it consists of putrid blood, or of a mixture of blood and bile.*—But blood, kept for months, gives a red colour to water, and its properties are not destroyed by putrefaction. It exhibits no flaky particles, and is not converted by acids into a fatty matter.

3. *That it consists of the villous coat of the stomach, in a state of dissolution, produced in consequence of inflammation, terminating in mortification.*—To this he objects, that the black vomit is frequently thrown up in large quantities, when the stomach, after death, has not been found much inflamed, or sphacelated. The dissections of Dr. Robert Jackson, of Dr. Lining of Charleston, Desportes of St. Domingo, and Dr. Physick, all contradict the idea, and seem to prove that the black colour of the vomited matter is owing to a mixture of vitiated bile.

4. *That the black vomit is bile changed to a black colour by meeting with the septic acid* (of Dr. Mitchill) *in the stomach and intestinal canal.*

Having dismissed all these opinions as incorrect, Dr. Cathrall next advances his own belief, viz. *that it is an altered*

*secretion from the liver.* Dr. C. grounds this conviction on the following considerations, (p. 29—32.)

"The colouring matter of the vomit appears, from the authors already quoted, to be generally traced, after death, to the gall-bladder. This position being incontrovertibly established by dissections, the power of the liver to secrete that substance will be admitted, of course, as it could not be secreted by the gall-bladder, or transmitted into that viscus through any other passage, but by the hepatic duct. If this view of the subject be, in any measure, just, it is a fact, ascertained beyond the shadow of a doubt, that the black flaky substance of the vomit is an altered secretion from the liver. This matter, being secreted by the liver, and deposited by the hepatic duct in the gall-bladder, in the last hours of this disease, is from thence forced, by the contractions of the gall-bladder and cystic duct, in conjunction with the violent action of vomiting, into the stomach. It there receives the addition of the yellow-coloured fluid, which is almost always ejected with the flaky substance. That this fluid is combined with the flaky matter in the stomach, and not in the gall-bladder, every inquiry into the appearances after death fully confirms. This circumstance renders the yellow-coloured fluid subject to some difference in its properties, according to the nature of the fluids received into the stomach a short time before vomiting: but all that I have had an opportunity of examining, have nearly the appearance we have already described. That the secretory economy of the liver may be so far arrested in its healthy action, by the progress of disease, as to assimilate a fluid having not the least analogy to bile, every work on morbid dissections certainly prove [*proves.*] Lieutaud mentions a case from Rivalerius, in consequence of a diseased liver, where the fluid in the gall-bladder resembled milk; and Storke relates a case of a dropsy succeeding an intermitting fever, where the fluid in the gall-bladder resembled the white of an egg. To these I may add one that came under my own observation, of a gentleman who died dropsical, in consequence of an enlarged liver. The gall-bladder contained a fluid of a dark colour, having not the least resemblance to bile. These, and many more cases, could be adduced to prove the power of the liver, under certain circumstances, to secrete a fluid dissimilar to bile; but it would be needless to recite them, as the instances already quoted are, no doubt, sufficient to establish the fact. This peculiar condition of the secretory vessels, in the yellow fever, is not confined solely to the liver; for we find that other secretory functions are sometimes affected in a similar manner, during the same disease, and nearly at the same period of time. In confirmation of these observations, I believe most physicians must have remarked, that, in some cases, the kidneys, during the period of black-vomiting, secrete a fluid of a dark colour, which has a thick pellicle on its surface, and appears almost as different from urine as the black vomit does from bile. This discharge is generally a precursor to a symptom which never fails to predict a speedy dissolution, viz. a paralysis of the secretory functions of the kidneys.

"The more I consider the material change produced in the different secreting vessels, during the last stage of this disease, the more this theory appears to be supported by reason and the plausibility of truth. But, though a morbid condition of the glandular economy of the liver may produce the coffee-ground coloured vomit, it does not seem probable that the black inspissated mucous matter which was ejected in the cases which proved mortal in 1797, is derived from the same source; for the liver, under no condition of diseased action that we are acquainted with, is capable of secreting mucus of such an appearance; therefore, we think it most reasonable to refer it to the surfaces, which are destined, in a state of health, to secrete mucus. Now, admitting the axiom, 'that similar causes produce similar effects, under similar circumstances,' why may not the glandular structure of the stomach be affected in a similar manner to that of the liver and kidneys, so as to enable it to secrete the mucous matter above-mentioned? This opinion, I think, may be affirmed by other analogies, not only in the sthenic, but in the asthenic condition of secreting surfaces, in which there are equally as great a deviation from healthy secretion as the one alluded to. This we have clearly exemplified in vessels destined to secrete mucus in a state of health; but when labouring under inflammation, evidently secrete pus."

6. *An Account of a case of disease, in which one side of the Thorax was at rest, while the other performed the motions of respiration in the usual way.* By C. Wistar, M.D. Read December, 1814. Vol. I. New Series. p. 381.

This is a very curious case, and we give it in the words of Professor Wistar.

"In the course of last summer, a gentleman was attended by Dr. Monges and myself, for an hæmoptysis, which occasioned his death. During his indisposition, we observed that one side of his thorax was neither dilated nor contracted during respiration, and that the ribs on that side were perfectly quiescent, although those of the other side performed more motion than usual, and therefore dilated that side of the thorax to an uncommon degree. We first noticed this some days before his death, and it continued so, without any alteration, during the remainder of his life. He made no complaints of pain or uneasy sensations, on the side which was without motion, but said that he had sensations on the other side which he believed were produced by the passage of blood from the

ruptured blood-vessels. Some years before, he had suffered with hæmoptysis and a consequent cough and expectoration, but he recovered from this so much, that he was strong and rather corpulent at the time of his last attack. Upon dissection, the cause of this extraordinary mode of respiration was very obvious. *That cavity of the thorax, which was without motion, was filled with pus. The volume of the lung of that side was greatly diminished, and the cellular structure of the organ entirely done away.*"

7. *An Enquiry into the Cause of the increase of Bilious and Intermitting fevers in Pennsylvania, with hints for preventing them.* By Benjamin Rush, M.D. Professor of Chemistry in the University of Pennsylvania. Read December 17, 1785. Vol. II. p. 206.

8. *An Enquiry into the Causes of the insalubrity of flat and marshy situations, and directions for preventing or correcting the effects thereof.* By William Currie. Read October 2, 1795. Vol. IV. p. 127.

9. *On the mode most easily and effectually practicable of drying up the Marshes of the maritime parts of North America.* By Thomas Wright, Licentiate of the College of Surgeons in Ireland, and Teacher of Anatomy. Read November 21, 1794. Vol. IV. p. 243.

10. *Experiments and Observations on the Atmosphere of Marshes.* By Adam Seybert, M. D. Read December 21, 1798. Vol. IV. p. 415.

Dr. Rush remarks that Pennsylvania has, for some years previous to the date of his communication, become more sickly than formerly. "Fevers, which a few years ago appeared chiefly on the banks of creeks and rivers and in the neighbourhood of mill-ponds, now appear in parts remote from them all, and in the highest situations." This change is referred to three causes :

1. The establishment and increase of mill-ponds. "There are whole counties in Pennsylvania, in which intermittents

were unknown, until the waters in them were dammed, for the purpose of erecting mill-ponds."

2. The cutting down of wood, or as it is technically called, *clearing* a country. The rays of the sun are thus permitted to act freely on the moist earth.

3. The different and unequal quantities of rain which have fallen within the last seven years. The summers of 1780, 1781, and 1782, were dry, and reduced the *creeks* and rivers far below their ancient marks, while the spring, both of 1784 and 1785 was very rainy, and swelled them beyond their natural heights. When the inundations subsided, they left a large surface exposed to the action of the sun, and of course to the developement of marsh miasmata. Dr. Rush observes, that a rainy season is not, in itself, unhealthy ; "it rather prevents fevers"—but dry weather succeeding to this, developes the causes of disease. It is remarkable, (he adds) that a wet season is often healthy in low, while it is sickly in hilly countries. "The reason is obvious. In the former, the rains entirely cover over all the moist grounds, while in the latter, they fall only in a sufficient quantity to produce those degrees of moisture which favour febrile exhalations."

Dr. Rush now adds some hints for obviating and preventing fevers. He advises the planting of trees around all the mill-ponds, (besides cleaning them occasionally) and in the greatest numbers to leeward of the ordinary current of the summer and autumnal winds. He has known instances where dwellings thus situated, near mill-ponds, have been exempted from the visitation of fevers. The trees act *mechanically*, in sheltering the pond from the action of the sun, and thus lessening exhalation, and also *chemically*, by absorbing unhealthy air, and discharging it in the pure state, now called "dephlogisticated air."

Cultivation should always keep pace with the *clearing* of lands. All moist spots should be drained—the weeds should be destroyed—the brush burnt, and the whole soil ploughed and sowed with grass or grain.

Among the individual means of prevention, he advises—the use of woollen as an article of dress in the autumnal months

—a generous diet—the avoidance of the evening air—and cleanliness, as well personal, as around the dwelling. Fires should be kept up in the house and even near it, when any particular spots are dreaded as exhaling noxious miasmata.

Mr. Surgeon Wright's plan of "*drying up the marshes of the maritime parts of North America,*" has, we believe, been carried into execution, though in a somewhat different manner from that proposed by him. Evaporation is the grand agent, by means of which noxious miasmata are removed, and this must be promoted by procuring a free circulation of wind over the moist surface. It is this which prevents the ague from being epidemic, or even endemic, in Ireland. "Let it be supposed, (says Mr. Wright) that the north-west and south-east are the asseclæ, or prevailing winds of North America; let the Surveyor General mark out a tract of say 100 or 200 miles, in a right line, to be cleared of trees; then every blast from these two opposite points will ventilate 200 miles of country, bearing along the fumes of all the marshes, while the great vista or avenue, skirted with wood at both sides, would furnish the most salubrious, and consequently valuable situation for settlers."

The Essay of Dr. Currie, refers to a more intricate and unsettled question in the history of *endemic causes*, viz. The chemical changes that pure atmospheric air undergoes in marshy situations. Assuming the proportions of pure atmospheric air to be 72 of azotè and 28 of oxygen in the hundred, he next quotes the experiments of Van Breda on the atmosphere of marshes, in the autumnal season. This, on being subjected to the common test of nitrous air in the eudiometer, gave very different proportions—only 14 or 15 parts of oxygen to 84 or 85 of azote, "but the bulk was supplied, and the same weight preserved, by a certain quantity of carbonic acid gas, and a small portion of hydrogen and ammoniacal gases, or aeriform fluids."

These gases, observes Dr. Currie, are the effects of animal and vegetable putrefaction, and must be derived from the soil. And as the miasmata, arising from marshy situations, are deemed the causes of disease, and no other substances but those

gases, can be discovered to issue from them, it necessarily follows, that the miasmata must consist of one or more of the gases.

The effect of these aeriform fluids on the human system is next considered. Carbonic acid gas, in large quantities, destroys life by its action on the irritability of the muscular fibre of the heart, and in small quantities, or diffused through atmospheric air, it probably would occasion a disease somewhat similar in its nature, i. e. a paralytic one, and " not an intermittent or remittent, since in these last, the sensibility and irritability are manifestly increased."

Hydrogen, from the experiments of Chaptal, De Rosier, and Beddoes, appears to have little or no share in the generation of these diseases. Its inspiration produced only trifling effects. Nor does the mixture of hydrogen with carbonic acid gas, make any alteration, as they neither decompose each other, nor set at liberty any caloric.

Lastly, ammoniacal gas, is a stimulant, except when directly inspired, and then it is deleterious, by producing spasm of the glottis.

These facts would lead us to doubt, (says our author) the doctrine generally taught, respecting marsh miasmata. Oxygen, however, is necessary to the healthy performance of the functions of life, and its diminution must proportionably remove the natural stimulus of the system; and as its quantity is proved, by experiment, to be less in marshy situations, Dr. Currie is disposed to ascribe their unwholesomeness " to a deficiency of the oxygenous portion of the atmosphere in such situations, in consequence of animal and vegetable putrefaction, in conjunction with the exhausting and debilitating heat of the days, and the sedative power of the damp and cold air of the nights." The nervous system becomes preternaturally susceptible, from the inability to perform the functions of the body in a healthy manner. Exposure to cold or damp air, renders the vessels of the skin atonic, and the internal organs, after sympathising with them, react with with increased velocity.

An additional argument in favour of this opinion is derived, by our author, from the occurrence of the diseases in ques-

tion, in situations remote from marshy ground, particularly in large and populous cities, where sedentary occupations and want of exercise render the inhabitants delicate and infirm.

"The opinion, then, arising from a specific matter generated by vegetable putrefaction, appears to be rendered groundless, from the disease varying in its type and symptoms, in proportion to the extent and putridity of the soil, state of climate, season and weather with respect to heat, moisture, &c. and also in its not being contagious; the reverse of which is the case with all known diseases that are derived from specific matter."

Recent and accurate observations have also shown, that the causes of nervous and putrid fevers are not the effluvia of putrid animal substances, but that they are derived "from the living human body in confined and unventilated situations; and it is probable that the effluvia, thus excreted, *partake of the quality of nitrogen gas, from their being rendered harmless by a union with oxygen.*" The contagion, thus generated, is rendered powerful and virulent, in proportion to the absence or defect of oxygen, and the degree of heat to which the living body has been exposed in such situations.

The means advised by Dr. Currie to prevent the occurrence of these febrile diseases, are to "introduce and increase the proportion of oxygen in the superincumbent atmosphere, and to prevent its future abstraction, by cutting off or diminishing the sources of putrefaction." This is principally to be sought for in the art of agriculture—by draining and levelling—consuming dead weeds and wood—and, after drying the ground, by raising grasses. If it be impossible to drain these marshy situations, they should be kept constantly flooded by dams or sluices. This will prevent, in a great degree, the effects of putrefaction.

Dr. Seybert's communication is mainly experimental. He examined, in the first place, air obtained by agitating stagnant water over marshy grounds. It burnt with a blue flame when a candle was applied to it, but did not explode when mixed with atmospheric air. On being agitated with lime-

water, a copious white precipitate was formed, and the bulk of the air was considerably diminished. The nitrous gas eudiometer produced only a diminution of 2-100 of their joint bulks. The absence of oxygen is hence very manifest.

The next examination was of air at some distance *above* the marshy ground. This gave a less copious precipitate in lime-water. It did not burn or explode when touched with a candle; but mixed with nitrous gas, its bulk diminished almost as much as pure atmospheric air. Hence, while this proves that there is a larger proportion than usual of carbonic acid gas, it is also evident, that the quantity of oxygen is fully equal to that in the air of healthy situations.

Having ascertained these qualities, the next object of Dr. Seybert is to ascertain the circumstances about marshes which produce such effects. Pure air exposed to the action of mud in the summer months, in close receivers, became diminished in bulk, indicated the presence of carbonic acid gas and had less oxygen. The opinion is hence advanced, that the process which goes on in these marshes, is "a decomposition of the stagnant water, effected by the putrefaction of the dead animal and vegetable substances which enter largely into the composition of the soil of marshes. The oxygen of the decomposed water unites with the carbon of the mud, and forms the carbonic acid gas, whilst the hydrogen is set at liberty."

If it be asked why, notwithstanding these results, the air above marshy situations is nearly pure, that is, as to its proportion of oxygen; it must be replied, that it has the advantages of ventilation, and that the living vegetables around them furnish large quantities of oxygen.

## *MISCELLANEOUS.*

Under this head we arrange seven papers: five of which belong to what is properly styled medical statistics, while the remaining ones treat of the education of the deaf and dumb and the construction of hospitals. In analysing the statistical papers, we shall strictly confine ourselves to the facts stated, leaving to some more appropriate and convenient sea-

son the comparison of the data here given, with subsequent investigations. We need hardly mention, how important the subject under consideration is to the medical philosopher—in reference to the causes of disease, the increase of population, and the duration and prolongation of life. We propose, at some future period, to notice it in detail, with particular reference to this country; and, if we are not mistaken, we shall show, that the speculations and assertions of many foreign writers, on this subject, are as unfounded as the spirit that dictates them is unfriendly.

1. *Observations on the probabilities of the duration of human life and the progress of population in the United States of America, in a letter from William Barton, Esq. to David Rittenhouse, LL.D. President A. P. S.* Read March 18, 1791. Vol. III. p. 25.

2. *Postscript to Mr. Barton's letter to Mr. Rittenhouse.* Read Dec. 2, 1791. Vol. III. 134.

Mr. Barton commences with some general remarks on the causes of the increase of population. Amongst them he ranks, a salubrious climate; fertility of soil, and consequent facility of obtaining subsistence; virtuous and simple manners of the great body of the inhabitants, and, as a result from this, early marriages; and lastly, a well ordered government. All these he considers as enjoyed by the citizens of this country.

He next proceeds to illustrate and compare the increase of our population, and the duration of life in the United States, by certain statistical facts; and these he classifies as follows:

1. *The number of births to each marriage.* In England, the most accurate observers reckon about, or a little above, 4 births to a marriage. In France, the number is considered to be 4½. In the Pays de Vaud, (medium of ten years) 3.90. In Berlin, according to Dr. Price, 3.93; while, in Amsterdam, it was only 1.92 births to a marriage.

Mr. Barton could only obtain the proportion in one place in this country, viz. the parish of Hingham, (Massachusetts.) During fifty-four years there were 2247 births, 1113 deaths,

and 521 marriages: "*Giving* (says Mr. Barton) 6.25 *births to a marriage.*" This is evidently incorrect, and it is certainly surprising how Mr. Barton came to fall into this error. The true proportion is 4.31 births to one marriage.*

2. *The number of persons to a house or family*, as a means of ascertaining the number of births to a marriage. In some of the healthiest parts of Europe (says Mr. B.) 4.50 persons is a large allowance. But according to the late census (1790) in Massachusetts there are 5.75 souls to a family in that state, exclusive of Indians and negroes. The proportion to a house is 6.85—since the families are to the houses as 6 to 5. The number of persons to a family, in Boston, is . . 5.39

| | |
|---|---|
| Salem, . . . | 5.30 |
| Marblehead, . . | 5.12 |
| Newburyport, . | 4.84 |
| Ipswich, . . , | 5.06 |

3. *The proportion of births to the whole population.* From data, drawn from the writings of La Place, Buffon, Price, &c. Mr. Barton deduces the proportions of these as follows:

| | |
|---|---|
| In France, one birth to every | 26 inhabitants. |
| England, one to every | 26.50 |
| Paris, one to every | 30 |
| London, one to every | 32.50 |
| While in Philadelphia, the proportion is one to every | 22.50 |

Making the births decidedly more numerous.

4. *The proportion of the population below sixteen years of age to the whole number.* Dr. Halley computes this at one-third, or . . . . . 33.33 to 100. But by a census of New-Jersey, taken by order of the government at two periods (1738 and 1745) the proportion

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* Mr. Malthus, in his Essay on Population, (vol. 2nd) notices this error of Mr. Barton. The above return, from the parish of Hingham, is taken (although Mr. Barton no where mentions it) from a paper of the Rev. Dr. Wigglesworth, in the Transactions of the American Academy of Arts and Sciences.

in 1738, was . . . . . 47.63 to 100.
in 1745, . . . . . 49.55 to 100.
Massachusetts (recent census) free white males, 48.02 to 100.
Philadelphia, . . . . . 42.05 to 100.

The high proportion, between the respective classes, is further illustrated by Mr. Barton in tables drawn from the United States' census for 1790, which he gives in his *postscript*, and which we shall copy.

5. *Excess of births over deaths.* Mr. Barton compares various countries and places in Europe with towns and villages in this country. We select only a few of the former.

Proportion of one hundred annual births to annual deaths:

Paris, (average of several statements) . . 100 to 100.99.
London, (26 years) . . . . . 100 to 124.92.
Denmark and Norway, 1764–5, . . . . 100 to 93.17.
England, . . . . . 100 to 80
France, from 1754 to 1763, . . . . . 100 to 76.94.
Kingdom of Prussia, 4 years ending 1718, 100 to 57.43.

Whereas, in this country:

*Philadelphia*, for 16 years, 100 to 45
for 4 years, 100 to 56.50
for 2 years, 100 to 49.94
*general average* for 22 years, 100 to 50.48.
*Salem*, medium of 1782 and 1783, and including still-born in the number of deaths, 100 to 49
In 1783 the measles were epidemic.
*Hingham*, (Mass.) . . . . . 100 to 49.50.

6. *Comparative Longevity.* Dr. Halley, in his Breslaw table, computes that 34 out of 1000 survive to the age of 80.

In the Pays de Vaud, the number is 46.50 out of 1000.

A country parish in Brandenbergh, 44.44 out of 1000.

These are among the most favourable.

In London, according to Dr. Price, 16.46 out of 1000.
Edinburgh, . . . . . 24 out of 1000.
Vienna, . . . . . 15 out of 1000.

On referring to places in this country, where the subject has been noticed, we find, that at

Ipswich, (Mass.) out of 164 deaths, in ten years, 21 survived 80 years.

Hingham, out of 1113 deaths, in 54 years, 84 survived 80.

Milford, (Connecticut,) out of 239 deaths, in 6 years, 33 survived 70.

Do. 417 deaths (from 1771 to 1782) 31 survived 80.

In the state of Connecticut, according to Dr. Morse, "one in 46 of the inhabitants, living in 1774, were upwards of 70; and from actual calculation, one in eight live to 70, one in thirteen to 80, and one in about thirty to 90." Reducing the above to the proper proportions, and adding others, we find the following:

| | | |
|---|---|---|
| Ipswich hamlet, . . . . | 128 | in 1000 survive 80 years |
| Hingham, . . . . . | 75.47 | do. |
| Connecticut (the whole state) | 74 | do. |
| Milford (Connecticut) . . | 74 | do. |
| Salem (Mass.) 1788, 1790, | 26 | do. |
| Philadelphia (4 years) . . | 25 | do. |

7. *Proportion of annual deaths to the whole number of living.* This, as we would readily suppose, varies greatly as to town or country. Dr. Price estimates the proportion, in

London and Edinburgh, at 1 in 21.
Rome, . . . . . 1 in 23.
Amsterdam, . . . . . 1 in 24.

Sussmilch considers the mortality, in large towns, at 1 in from 24 to 28; in small towns, 1 in from 28 to 31; and in the country, 1 in from 40 to 50. Dr. Price is, however, inclined to lessen the numbers. In Philadelphia, however, the mortality was found to be only . . . . 1 in 45; and

in Salem (4 years) . . . . . 1 in 47
in Savannah (Georgia) 1 year, . 1 in 31.70.

In the *Postscript* to his letter Mr. Barton gives some curious tables, deduced from the then recent census (1790) of the United States. They furnish some striking facts, as it respects the *old* and the *new States*. We give them in a condensed form.

| States. | Free white males, under 16 years, to every 100 free white males of all ages. | Free white females, of all ages, to every 100 free males of all ages. |
|---|---|---|
| Kentucky | 52.95 | 89.78 |
| North Carolina | 52.54 | 95.40 |
| Georgia | 51.73 | 94.77 |
| South Carolina | 51.46 | 91.24 |
| Virginia | 51.14 | 94.70 |
| Delaware | 50.75 | 93.55 |
| Vermont | 49.88 | 90.49 |
| Rhode Island | 49.65 | 102.62 |
| New-Hampshire | 49.12 | 98.90 |
| Pennsylvania | 49.11 | 94.77 |
| Massachusetts | 48.31 | 102.10 |
| New-York | 48.27 | 94.12 |
| Maryland | 47.86 | 94.53 |
| New-Jersey | 47.78 | 96.10 |
| Connecticut | 47.33 | 102.94 |
| South Western Territory | not ascertained by the census. | 92.85 |

The excess of females over males is very striking in States so long settled as Massachusetts, Connecticut, and Rhode Island, while in Kentucky, Vermont, and the south western Territory, the opposite is no less remarkable.

Since Mr. Barton published his essay, a census of the inhabitants of the United States has been taken three times, and it will hereafter be interesting to inquire, how nearly the results deduced from them agree with those we have now quoted.

3. *Statement of Deaths with the diseases and ages in the City and Liberties of Philadelphia, from the 2d of January*, 1807, *to the 1st of January*, 1809. Communicated by the Board of Health. Vol. VI. p. 403.

4. *Abstract and results from eight annual statements* (1809 *to* 1816) *published by the Board of Health, of the Deaths, with the diseases, ages, &c. in the City and Liberties of Philadelphia.* Communicated by John Vaughan. Read Jan. 9, 1817. Vol. I. new series, p. 430, &c.

5. *Statement of Deaths, with the diseases and ages, in the City and Liberties of Philadelphia, from the 1st of January*, 1817, *to the 1st of January*, 1818. Vol. I. new series, p. 453.

We shall confine ourselves in this article, as in the preceding, to a simple statement of the facts contained in the respective communications. A part of these appear as official documents, and the whole is published under the high sanction of the society. To those who may compare these tables with the more extensive ones that have lately appeared in a cotemporary journal, some discrepancy will be observed, particularly as to the population of Philadelphia.

TABLE I. *Population of Philadelphia.*

| CENSUS. | CITY. | SUBURBS. | COUNTY. | TOTAL. |
|---|---|---|---|---|
| 1790 | 28,522 | 13,998 | 3,657 | 46,177 |
| 1800 | 41,299 | 26,641 | 4,201 | 72,141 |
| 1810 | 53,722 | 37,460 | 3,654 | 94,836 |
| 1816 | estimated at ..... | | | 115,000 |
| 1817 | estimated at ..... | | | 120,000 |

The above includes (in the words of the Philadelphia Board of Health) the population of the City and Liberties of Philadelphia and that part of the County which is connected with the bills of mortality, under notice.

TABLE II. *Deaths from* 1807 *to* 1817 *inclusive, designating also whether above or below twenty years.*

| YEARS. | ADULTS. | CHILDREN. | UNKNOWN. | TOTAL. |
|---|---|---|---|---|
| 1807 | 1,204 | 841 | ..... | 2,045 |
| 1808 | 1,046 | 1,225 | ..... | 2,271 |
| 1809 | ..... | ..... | ..... | 2,004 |
| 1810 | ..... | ..... | ..... | 2,036 |
| 1811 | ..... | ..... | ..... | 2,386 |
| 1812 | 8,542 | 7,458 | 359 | 2,159 |
| 1813 | | | 659 | 2,291 |
| 1814 | ..... | ..... | 354 | 2,137 |
| 1815 | ..... | ..... | ..... | 2,040 |
| 1816 | ..... | ..... | ..... | 2,319 |
| 1817 | 1,293 | 924 | ..... | 2,217 |
| | 12,085 | 10,448 | 1,372 | 23,905 |

**An abstract is given, showing the number of adults and children that died from 1809 to 1816 inclusive. This will explain the inability to state the annual results.**

"From some misunderstanding between the local authorities, relative to the public burying-ground, the Health Officers could, during its three years' continuance, only ascertain the *numbers* interred there, without a discrimination of disease, age, or sex, viz.—for 1812, 359—1813, 659—1814, 354—total 1372."

These, it will be observed, must necessarily be added to the subsequent tables.

TABLE III. *Deaths in each month of the year.*

| | Jan. | Feb | Mar. | Apr. | May | June | July | Aug. | Sept | Oct. | Nov. | Dec. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1807 | 150 | 118 | 154 | 157 | 133 | 159 | 237 | 268 | 237 | 162 | 155 | 115 | 2,045 |
| 1808 | 163 | 123 | 154 | 169 | 179 | 227 | 374 | 297 | 185 | 154 | 152 | 121 | 2,271 |
| 1809 to 1816 incl. | 1169 | 1091 | 1238 | 1321 | 1223 | 1330 | 1507 | 2078 | 1398 | 1304 | 1203 | 1138 | 16,000 |
| 1817 | 157 | 170 | 185 | 207 | 213 | 195 | 189 | 230 | 233 | 146 | 142 | 150 | 2,217 |
| | 1612 | 1502 | 1731 | 1854 | 1748 | 1911 | 2307 | 2873 | 2053 | 1766 | 1652 | 1524 | 22,533 |
| Add unknown of 1812-13-14 | | | | | | | | | | | | | 1,372 |
| | | | | | | | | | | | | | 23,905 |

TABLE IV. *Abstract of the Ages of the registered deaths.*

| | Under 1 year. | From 1 to 2. | 2 to 5. | 5 to 10. | 10 to 20. | 20 to 30. | 30 to 40. | 40 to 50. | 50 to 60. | 60 to 70. | 70 to 80. | 80 to 90. | 90 to 100. | 100 to 120 | *Unknown* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1807 | 614 | | 121 | 65 | 79 | 144 | 236 | 172 | 139 | 88 | 79 | 60 | 11 | 4 | 233 |
| 1808 | 583 | 284 | 167 | 93 | 95 | 212 | 219 | 186 | 128 | 93 | 61 | 30 | 7 | 2 | 101 |
| 1809 to 1816 incl. | 4106 | 1244 | 965 | 580 | 630 | 1670 | 2065 | 1533 | 1060 | 797 | 573 | 354 | 99 | 18 | 256 |
| 1817 | 548 | 138 | 134 | 73 | 96 | 256 | 325 | 222 | 162 | 106 | 84 | 61 | 11 | 1 | ... |
| Total | 7517 und. 2 yrs. | | 1387 | 816 | 950 | 2282 | 2845 | 2113 | 1489 | 1089 | 797 | 505 | 128 | 25 | 590 |

| | |
|---|---|
| Total | 22,533 |
| Add | 1,372 |
| | 23,905 |

Proportion of deaths under 2 years to the whole number,... 1 to 3.18

TABLE V. *Abstract of Deaths, with designation of the sexes, from* 1811 *to* 1817.

| | Males. | | Females. | | Children, sex unknown | Total | | |
|---|---|---|---|---|---|---|---|---|
| | Above 20 yrs. | Under 20 yrs. | Above 20 yrs. | Under 20 yrs. | | | | |
| 1811 | 719 | 562 | 525 | 433 | 147 | 2,386 | | |
| 1812 | 505 | 419 | 417 | 381 | 78 | 1,800 | | |
| 1813 | 521 | 308 | 322 | 383 | 93 | 1,632 | | |
| 1814 | 540 | 373 | 425 | 289 | 156 | 1,783 | | |
| 1815 | 763 | 371 | 490 | 284 | 132 | 2,040 | Males ..... | 7,420 |
| 1816 | 703 | 450 | 585 | 399 | 182 | 2,319 | Females ..... | 5,862 |
| 1817 | 748 | 438 | 545 | 379 | 107 | 2,217 | Unknown .... | 895 |
| | 4,499 | 2,921 | 3,309 | 2,553 | 895 | 14,177 | | 14,177 |
| | | | | | | | Add, Unknown .... | 1,372 |
| | | | | | | | | 15,549 |

TABLE VI. *Abstract of the principal Diseases.*

| Diseases. | 1807. | 1808. | 1809. | 1810. | 1811. | 1812. | 1813. | 1814. | 1815. | 1816. | 1817. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Apoplexy | 30 | 34 | 31 | 31 | 46 | 34 | 29 | 25 | 50 | 36 | 25 |
| Cholera | 189 | 230 | 153 | 206 | 240 | 157 | 178 | 127 | 94 | 90 | 137 |
| Consumption | 306 | 301 | 311 | 306 | 369 | 339 | 216 | 274 | 347 | 434 | 349 |
| Convulsions | 127 | 145 | 170 | 183 | 162 | 177 | 166 | 174 | 180 | 167 | 167 |
| Diarrhœa | 75 | 74 | 37 | 18 | 35 | 20 | 31 | 25 | 33 | 33 | 59 |
| Dropsy | 54 | 67 | 34 | 42 | 75 | 49 | 42 | 35 | 53 | 52 | 64 |
| in the head | 48 | 52 | 40 | 44 | 47 | 50 | 38 | 40 | 65 | 84 | 65 |
| Dysentery | 70 | 40 | 20 | 27 | 48 | 24 | 69 | 66 | 44 | 30 | 33 |
| Fever, (no type mentioned) | 36 | 22 | 17 | 31 | 32 | 29 | 41 | 25 | 35 | 33 | 47 |
| Intermittent | 4 | | | 3 | 5 | 4 | 6 | 5 | 1 | 2 | 6 |
| Remittent | 20 | 45 | 52 | 17 | 14 | 21 | 12 | 12 | 20 | 22 | 21 |
| Bilious | 11 | | | 15 | 23 | 8 | 18 | 4 | 20 | 17 | 16 |
| Nervous | 10 | | | 7 | 11 | 4 | 5 | 13 | 8 | 6 | 6 |
| Malignant | 1 | 35 | 62 | 3 | 5 | 3 | 6 | 7 | 2 | 2 | 4 |
| Typhus | 34 | | | 39 | 43 | 36 | 102 | 94 | 84 | 78 | 95 |
| Malignant Bilious | 3 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Hectic | 4 | 4 | 1 | 1 | 6 | 5 | 1 | 5 | 3 | 4 | 5 |
| Inflammatory | 5 | 10 | 3 | 5 | 4 | 6 | 1 | 6 | 5 | 4 | 2 |
| Scarlet | 2 | 2 | 3 | 2 | 3 | 1 | .... | .... | .... | .... | .... |
| Puerperal | 7 | 2 | 4 | 12 | 4 | 4 | 2 | 1 | 3 | 24 | 14 |
| Hives or Croup | 55 | 53 | 33 | 49 | 40 | 20 | 34 | 22 | 20 | 30 | 21 |
| Hooping Cough | 17 | 11 | 96 | 32 | 54 | 24 | 29 | 23 | 6 | 46 | 21 |
| Inflammation of the lungs | 48 | 66 | 34 | 12 | 10 | 4 | 12 | 6 | 9 | 19 | 8 |
| Pleurisy | 38 | 35 | 31 | 73 | 67 | 70 | 49 | 65 | 126 | 130 | 88 |
| Catarrh | 7 | 23 | 13 | 8 | 10 | 17 | 6 | 19 | 21 | 46 | 30 |
| Influenza | 30 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Insanity | 31 | 25 | 13 | 29 | 32 | 30 | 25 | 22 | 36 | 27 | 24 |
| Parturition | 12 | 4 | 1 | 1 | 5 | 3 | 4 | 6 | 7 | 9 | 5 |
| Small Pox, natural | 30 | 141 | 95 | 33 | 113 | .... | .... | .... | .... | 97 | 52 |
| inoculated | 2 | 4 | 6 | 1 | 4 | .... | .... | .... | .... | .... | .... |
| Scrofula | 3 | 6 | 10 | 10 | 16 | 6 | 8 | 13 | 19 | 11 | 16 |
| Still-born | 84 | 126 | 120 | 139 | 137 | 142 | 66 | 96 | 97 | 94 | 110 |
| Suicide | 9 | 4 | 5 | 6 | 2 | 3 | 1 | 5 | 6 | 8 | 2 |
| Teething | 10 | 10 | 15 | 7 | 20 | 11 | 9 | 10 | 8 | 23 | 26 |
| Worms | 37 | 20 | 13 | 15 | 12 | 10 | 8 | 4 | 11 | 12 | 14 |
| Measles | .... | 73 | .... | 1 | 2 | 20 | 1 | 9 | 7 | 2 | .... |

6. ***On Teaching the Surd, or Deaf and consequently Dumb to Speak.*** By Wm. Thornton, M.D. Vol. III. p. 310.

This forms the appendix to a dissertation honoured with the Magellanic gold medal, by the society in January, 1793, and entitled, " Cadmus, or a Treatise on the Elements of Written Language."

Dr. Thornton commences by remarking, that it should be first ascertained whether the dumbness is occasioned merely by deafness, or by malconformation of the organs of speech. His advice can be useful to the former only. If young, the subject should be taught to attempt pronunciation, by imitating the motion of children in speaking; and for this purpose, a child who can speak should pronounce, before the deaf child, the letters which you wish him to learn. This should be done slowly, distinctly, and with many repetitions.

The pupil must also be taught to distinguish the various sounds of words in others. This may be effected by opening the mouth and disposing the lips and tongue in their proper position. The mute will attempt an imitation, and the letter, which the sound he makes resembles, should be pointed out to him. If the sound be vocal, let him feel it at his own throat, as well as that of the person instructing. The necessity of frequent repetition with all these is very evident, and the correct imitation may be accelerated by exercising before a mirror.

After having learnt the true sounds of the English letters, the pupil will be capable of reading as well as of speaking. Dr. Thornton particularly recommends the use of prints or drawings in explaining the nature of common objects.

This is a very brief view of the observations of our author. Subsequently to the publication of his essay, the Abbe Sicard has abandoned the attempt to teach the dumb to speak as useless, and really not deserving the trouble required, while Dr. Watson, in England, is an advocate of its practicability and importance. We are not sufficiently acquainted with the merits of the subject to form a decided opinion on it.

7. *Observations on the Construction of Hospitals.* By Mr. Le Roy, member of the Royal Academy of Sciences. Vol. III. p. 348.

This purports to be a short extract from an essay which was transmitted by the author to the Society, but could not be inserted entire, as it contained many remarks of a local nature confined to Paris.

The only important suggestion that we notice is one calculated to obviate the want of perfect ventilation. For this purpose Mr. Le Roy advises, that a large hospital should consist of distinct and separate buildings, each forming one ward, and erected upon arches or columns at a considerable height from the ground. The ceiling or roof of each ward to be formed into spherical arches—while the crown of each arch should open into a funnel, like a common chimney.

In each floor, at proper distances, should be a row of holes, to allow the transmission of air from below, and the rooms may be warmed by placing grates or stoves over these holes.

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We have been forcibly struck with the diminution, and indeed absence, of medical papers in the American Philosophical Transactions, of late years. Since 1814, only three have been published. Dr. Dorsey's, bearing the date of 1817, is the last. And yet the pretensions of the living are fully equal to the deserved reputation of the dead. Perhaps it is intended to confine their investigations to medical journals.

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Art. II. *Formulary for the Preparation and Employment of many new Medicines.* By F. Majendie. Translated from the fifth edition, revised and augmented by John Baxter, M.D. with notes and additions. New-York, George H. Evans & Co. pp. 140. 1827.

The translator of this valuable little work, has rendered an acceptable service to the profession by contributing to the

more general diffusion of knowledge, concerning the most efficient agents of the Materia Medica. It would be useless to dwell upon the merits of the remedies considered as a *class*, which have, within a few years, been brought into notice by the discoveries of the chemists. These are now sufficiently attested by the general use of some of them, and by the high success which has attended their administration. Many of them, however, have scarcely been introduced to the profession in this country, and for our knowledge of them we are almost exclusively indebted to French chemists and French physiologists.

With a view of directing the attention of our physicians more particularly to the examination and employment of these new medicines, we shall offer a brief account of each. In doing which, we shall depend, chiefly, upon the work before us, the author of which has contributed, perhaps, as much as any other individual, to the information which we, at present, possess concerning them. We shall, in all cases, omit the more complicated chemical processes by which many of these articles are obtained, as they will seldom be employed by the practitioner.

Resin of Nux Vomica.—*The alcoholic extract of Nux Vomica* is prepared as follows: Take a determinate quantity of nux vomica rasped; exhaust it by alcohol of 40°, and at the lowest possible temperature, renew it until nothing more is derived from the raspings; then evaporate slowly to the consistence of an extract.

Alcohol much more feeble, might be used; but then a matter, much less active, will be obtained, because this alcohol dissolves a great quantity of gummy matter.

*The dry alcoholic extract* is obtained by filtering the strongest alcoholic tincture, and evaporating upon plates.

*Physiological properties.* A grain of this extract, absorbed at any point of the body, or mixed with the food, causes quickly the death of a middling sized dog, producing attacks of tetanus, which, by prolongation, impede respiration until complete asphyxia is produced.

When the dose is much stronger, the animal appears to perish by the same action of the substance, on the nervous system. A contraction of the spleen is observed in animals poisoned by the extract, and when an animal, under the action of it is touched, a convulsive motion takes place, similar to a strong electric shock.

The section of the spinal marrow behind the occiput, and even the complete beheading, does not prevent the effects of this substance from taking place, and even from continuing some time. This character distinguishes the action of the alcoholic extract of strychnos, from that of all other substances at present known. The excitement of the spinal marrow is only transmitted to the muscles by the anterior roots of the rachidian nerves: the posterior roots have not the same property.

The action of the alcoholic extract on man in health, is the same with that just described, and if the dose is carried high enough, death happens quickly with the same symptoms. The body offers, likewise, no apparent lesion of the tissue: nothing is observed but traces of asphyxia, which has produced or accompanied death.

Upon a man affected with paralysis, the effects are similar to those described; but they have this very remarkable circumstance, that they are particularly exhibited in the paralyzed parts. It is there that occurs the tetanic agitation; it is there that a feeling of prickling announces the action of the medicine: finally, it is there that is developed a local perspiration which is not observed elsewhere. In hemiplegias, submitted to the action of nux vomica, the contrast between the two halves of the body is striking: while the sound side is quiet, the sick side experiences extreme agitation; tetanic spasms succeed one another rapidly, and a copious sweat appears. A case is mentioned of a woman, in whom the affected side was covered with an anomalous eruption, while the opposite side did not offer the slightest trace. The tongue itself presents this difference between the two halves; one experiences often a bitter taste, very evident, while the other offers nothing of the kind.

If the dose is carried further, the two sides participate, but unequally, in the tetanic effect; so much so, that the patient is sometimes thrown out of bed, so intense are the tetanic paroxysms.

In a feeble dose, the alcoholic extract of nux vomica, like many remedies, has not any action which can be immediately recognised: it is only after a certain number of days, that its advantageous or injurious effects can be appreciated.

The cases in which the extract of nux vomica may be employed, are all diseases of debility, either local or general; paralysis of all kinds, general or partial. It has been used, with decided advantage, in amaurosis with palsy of the upper eyelid, in marked debility of the organs of generation, incontinence of urine, &c.; in cases of atrophy of the superior and inferior extremities. Also, for feeble stomachs, and extreme general debility, with irresistible tendency to sleep. Several cases are related in which palsies of various kinds have been completely cured by the administration of this extract.

It should be stated, however, that it is not proper to give to patients the extract of nux vomica, strychnine, or brucine, but at a distant period from that at which the apoplexy took place, which occasioned the paralysis; and cure is not obtained in these consecutive palsies, where there is cerebral organic lesion; for while such lesion exists in any part of the brain having influence on the movements, the palsies which result are incurable, and it would be dangerous to persist in the employment of these remedies.

*Mode of administration.*—The preferable form for exhibiting this extract, is that of pills, if it be wished to obtain the manifest effect, that is, the spasms. Each pill should contain one grain of the extract; beginning with one or two, and increasing each day until the desired effect is obtained; then stopping to avoid accidents. It is best to give the pills in the evening, because the night is the best time to observe the phenomena which are to be produced.

Sometimes the dose must be carried to 24 or 30 grains in a day, to obtain the tetanic spasms; but most generally 4 or 6

grains is sufficient. And if, for any reason, the use of the remedy is interrupted for several days, it is necessary to return to small doses, and not to take up the larger doses but by degrees.

When it is desirable to obtain the slight effects of the substance, a grain or half a grain is a sufficient quantity. An alcoholic solution may also be used, of which this is the formula :

| | |
|---|---|
| Alcohol at 36°, | 1 ounce, |
| Dry extract of nux vomica, | 3 grains. |

This tincture is administered by drops, in draught or the drinks, under the same circumstances as the alcoholic extract in substance. It may also be employed in frictions on paralyzed or emaciated parts. This last mode of using it is now much resorted to in Italy.

Strychnine.—This is one of the vegetable alkalies discovered by Mess. Pelletier and Caventou. It is obtained from the *Strychnos nux vomica* and *S. ignatia*, in which it exists in combination with a vegetable acid, which these authors have denominated *Igazuric acid*. M. Henry, chief of central pharmacy, has greatly simplified the process for extracting strychnine. It consists in boiling nux vomica in water; in evaporating the liquors to the consistency of syrup; in then adding lime, which takes away the acid and leaves the strychnine uncombined. This is separated from the lime by means of alcohol. The strychnine, dissolved in alcohol, is then obtained from its solvent by evaporation. To obtain it more pure, it is dissolved anew in alcohol, and is crystalized a second time.

Strychnine is usually combined with another alkaline principle, called brucine. But the bean of S. ignatius contains strychnine almost exempt from brucine, as Mess. Pelletier and Caventou have proved, and it may, therefore, be advantageously employed to obtain pure strychnine. Unfortunately, however, this article is rare in commerce.

The mode of action of strychnine, is entirely similar to that of the alcoholic extract of nux vomica, only it is more ener-

getic. An eighth of a grain is sufficient to kill a dog of common size: upon a healthy man, a quarter of a grain has often very evident effects.

The cases which require its use, are the same which have been pointed out for nux vomica. Indeed, there would seldom be any occasion for resorting to the strychnine, if the extracts of nux vomica were always made in the same manner, and if they were not subject to vary in strength, according to the process followed for their preparation. In general, then, it is preferable to replace it by the strychnine, by reason of the constancy of its properties and uniformity of its action. The good effects from it are as marked as those obtained from the nux vomica.

Strychnine may be employed in the form of pills or tincture. The following are the formulæ given by our author.

*Pills of strychnine.* ℞ Strychnine, very pure, 2 grains,
Conserve of roses, 1–2 drachm.

Mix exactly, and make in 24 pills.

*Tincture of strychnine.* ℞ Alcohol at 36°, 1 ounce,
Strychnine, 3 grains.

This tincture is given by drops, from 6 to 24, in draughts or drinks.

The salts of strychnine are crystallizable, and for the most part, soluble. It is necessary, therefore, to recollect the great solubility of these salts, when strychnine is mixed in the draughts, or when the drinks are given to the patient; thus lemonade and all acid substances, promote the effect of strychnine. The subcarbonate of strychnine is very little soluble.

These salts are more active, and consequently more poisonous, than the base, because of their great solubility. It would, however, be more advantageous, in some cases, when the patient is used to the action of strychnine, to substitute the salts for the base, without augmenting the dose.

Brucine.—This alkaline principle was discovered in 1819, by Mess. Pelletier and Caventou, in the bark of *Brucea antidysenterica*, (false angustura), in which it is combined with gallic acid, in the state of an acid gallate. The same che-

mists have since found it associated with strychnine in the nux vomica.

In the bean of S. ignatius, and in the upas, the brucine plays the same part with regard to the strychnine, which the cinchonine does with the quinine. The cinchona the most active, contains the most quinine. So the bean of S. ignatius, and the upas tienta, much more active than the nux vomica, contains little brucine and much strychnine. Strychnine is almost pure in the upas.

Brucine is extracted from the bark of the false angustura, by a process similar to that for obtaining strychnine. It crystallizes in the form of oblique prisms, the bases of which are parallelograms. It is more soluble in water than strychnine; has an intense bitter and acrid taste, which is durable in the mouth; and unites with acids and forms neutral salts, most of which are susceptible of regular crystallization. When these are put in concentrated nitric acid, they acquire a more intense crimson colour: by heating, the colour changes to a yellow. If, in this state, a proto-muriate of tin is poured upon them, a superb violet precipitate is produced. These effects are not produced by pure strychnine, and we have thus a ready method of distinguishing between these two alkalies.

The action of brucine, on the animal economy, is analagous to that which strychnine exercises, but is less energetic. According to some experiments of Majendie, the intensity is to that of pure strychnine as 1 to 12; others, however, make the difference greater. It required 4 grains of brucine to kill a rabbit. A middling sized dog having taken 4 grains of brucine, had strong attacks of tetanus, but did not die. The brucine could then replace the strychnine: it has the advantage of producing analogous effects, without the inconvenience of great activity.

Brucine may be used like the strychnine, in pills or in tincture, gradually increasing the dose. For medical purposes, that extracted from the bark of the false angustura should be used: that taken from the nux vomica is too apt to be mixed with a certain quantity of strychnine, which increases its energy, and prevents our calculating the effects.

The cases where brucine may be employed are, of course, similar to those in which strychnine is indicated. It may be given with safety, in the dose of one, two, or three grains; and it is even probable that this dose may be carried much higher, but it should be done with much caution.

The following are formulæ for pills and tincture of brucine:

*Pills.* ℞ Brucine, very pure, 12 grains,
Conserve of roses, 1–2 drachm.

Mix exactly, and divide into 24 pills.

*Tincture.* ℞ Alcohol at 36°, 1 ounce,
Brucine, 18 grains.

This tincture may be given in drops, from 6 to 24, in a draught or drinks.

Brucine, in combining with acids, forms neutral and acid salts, of which the sulphate and muriate being more soluble than their base, present some advantages, and probably have more activity; they may take the place of brucine in the formulæ above given.

Morphine and its Salts.—The great difference of opinion among medical men, concerning the powers of opium, has been satisfactorily accounted for since the recent improvement in chemical vegetable analysis. It results from the labours of chemists in this respect, and particularly from the researches of Messrs. Derosne, Setuerner, Robiquet, and Robinet, that opium is composed of

1st. A fixed oil.
2d. A matter resembling caoutchouc.
3d. A vegeto-animal substance.
4th. Mucilage.
5th. Fecula.
6th. Resin.
7th. The remains of vegetable fibre.
8th. Narcotine.
9th. Meconic acid.
10th. Morphine, in combination with meconic acid.

We reject the *meconate of soda* and the *codic acid*, which are still retained by the American translator. Robiquet has shown, that the pretended *codate of morphine* is a *muriate*, formed by the double decomposition between the muriate of soda and meconiate of morphia, the former of which Robiquet employed in his analysis. The same decomposition shows the source of the meconate of soda. M. Robiquet had admitted his mistake.

It is in the morphine that the narcotic powers of the opium reside, which may be sufficiently demonstrated by the administration of quite feeble doses of the alkali, or more particularly of its salts. Of these, the sulphate, the hydrochlorate, and the acetate, are all employed as remedies, though Majendie gives the preference to the acetate.

From the observations of Orfila upon the action of morphine on the animal economy, it appears,

1st. That morphine, introduced in a solid state into the stomach of a man, acts like the acetate; hence it is inferred, that it is dissolved by the acids found in the viscera.

2d. That the action of the acetate and the other soluble salts of morphine, is very powerful and even poisonous.

3d. That the aqueous extract of opium, prepared in the ordinary manner, acts not only by the meconate of morphine which it contains, but, also, by the narcotine and the other matters which enter into its composition.

4th. That hence, the salts of morphine which are now employed in medicine, do not produce the same effects as opium. *Thenard. Traite de Chimie.* V. III. 724. 1827.

The salts of morphine may be easily formed; in most cases, by the direct combination of the acid and the alkali. They may be used in the form of syrup, pill, or solution, in doses of from one-fourth to one grain of the salt in twenty-four hours. Upon this point, the following remark by our author, may be of service to the practitioner. "It is necessary to repress, very much, the ideas which were at first formed, respecting the activity of this remedy; and moreover, it is necessary to guard against viewing it as a very subtle poison: on the contrary, it is now ascertained, without

doubt, that to become deleterious, it must be administered in a large dose ,and that it should excite vomiting. This last circumstance must be very rare." p. 24 and 5.

The preparation of opium, called *black drop*, is now quite extensively employed in the United States, particularly in our large cities. Different methods are proposed for its preparation; all which may be resolved into combination of a vegetable acid, generally the cetic or acetic, with opium, and the addition of some aromatic substances, and a little sugar or honey.

This preparation has been highly extolled on the ground that it does not irritate the stomach, nor cause head-ache, vertigo, nausea, &c. ; in short, that it is deprived of the exciting powers of opium. But it is evident, that when prepared in the ordinary way, it contains both morphine and narcotine. If, therefore, we desire the pure citrate of acetate of morphine, the acid must be combined with pure morphine, or we must, at least, employ opium which has been deprived of its narcotine.

With regard to the dose it is remarked, that one part of this liquor of citrate of morphine equals about three parts of opium, in cases where a small quantity is sufficient to produce the effect; but when it is necessary to give large doses, we may calculate upon a double activity. It is necessary to avoid giving at the same time with this preparation, either lime water or water of ammonia, or, in fact, any of the alkaline carbonates, because there is always excess of acid.

Extract of Opium deprived of Morphine.—This is the substance which remains after opium has been submitted to the process for obtaining morphine. But upon this we entirely agree with the translator, that " as the quantity of morphine in the extract, besides its containing narcotine, will always vary, it must not only be a useless, but a dangerous medicine; since there will always be an uncertainty in exhibiting it in practice." p. 27.

NARCOTINE.—We are still in want of sufficient information concerning this, to entitle it to the rank of a medicine. When given in the dose of one grain, and dissolved in oil, it is said to produce "upon dogs, a state of stupor which persons unaccustomed to experiments, might easily confound with sleep: however, this state evidently differs from it. The eyes are open, the respiration is not deep as in sleep, and it is impossible to rouse the animal from this dull and immoveable state. Death occurs, ordinarily, in twenty-four hours.

"Combined with acetic acid, the effects are entirely different; the animal can support strong doses (24 grains) without perishing; and while they are under the influence of this matter, they are agitated by convulsive movements, similar to those produced by camphor; there are the same signs of fear, the same movements backward, the same impossibility to go forward; finally, the same foaming at the mouth, and the same agitation of the jaws," &c. p. 28.

This notice of the effects of narcotine, is sufficient to prove the decided advantage those preparations possess, which contain only morphine or its salts.

EXTRACT of OPIUM DEPRIVED of NARCOTINE.—For obtaining this extract, the ordinary aqueous extract is treated with ether, which takes away all the narcotine. There appears to be some dispute with regard to the substance. Majendie supposes its effects to be clearly narcotic, and to have an action entirely similar to morphine, but more feeble. This, however, is doubted by the American translator. We may add, that Dr. Hare has recently repeated the process of M. Robiquet, and the denarcotized opium thus obtained, has been used with decided advantage by Dr. Dewees. The cases are to be found in the 12th volume of Silliman's Journal, p. 291.

EMETINE.—An alkaline principle, discovered by M. Pelletier, in the root of the cephalic ipecacuanha and of the viola ipecacuanha, to which these articles owe their emetic power. It possesses the advantage of being more active than ipecacuanha itself, of being destitute of its disagreeable taste and

nauseous smell, and is proposed as a substitute for it on all occasions.

Emetine is a white, pulverulent substance, which does not deliquesce by exposure to the air. It acts like an alkali upon vegetable colours. It is dissolved by all the acids, the acidity of which it diminishes; but without entirely destroying it.

The action of emetine may be inferred from its history. Two grains are sufficient to kill a moderate sized dog, and Majendie states, that he has seen vomiting produced in a man by the sixteenth of a grain. It may be administered in some sugar or acetic acid, either in the form of syrup or solution, in divided doses. In general, a grain will be sufficient to produce full vomiting.

The impure or coloured emetine is also recommended by Majendie, as a remedial agent. It possesses powers similar to those of pure emetine, but it is much less energetic. Perhaps it will seldom be employed, except in cases when the pure emetine cannot be obtained. We object to the names *emetine* and *pure emetine*, adopted in the Formulary, as leading to confusion. They should be *emetine* and *impure emetine*.

Cinchonine and Quinine.—It is chiefly to the labours of Pelletier and Caventou, that we are indebted for the interesting fact, that the virtues of the cinchona barks depend upon two alkaline principles, which have received the above names. The ulterior researches, made upon large masses, have shown that the quinine and cinchonine exist, simultaneously, in the three kinds of bark commonly employed; but in the grey, the cinchonine is, in relation to the quinine, in much larger quantity. The contrary is the case in the yellow bark, where the quinine is so decidedly predominant, that the other frequently escapes notice when small portions are operated on.

Cinchona crystallizes in white translucent needles, only soluble in 700 parts of cold water. It unites with acids, and forms salts more or less soluble. Of these, the sulphate and acetate are used in medicine.

*Quinine* is white, and is scarcely susceptible of crystalli-

zation. It is less soluble in water than the cinchonine; however, its taste is much more bitter. Its salts are also, in general, more bitter; they have a pearled appearance which distinguishes them. Quinine is very soluble in ether, while cinchonine is very little so, which affords a means, not only of distinguishing their bases, but also of separating them when they are found united.

*Sulphate* of *quinine*, now so extensively employed, occurs under two forms; viz. that of the sub or neutral sulphate, and the acid or bi-sulphate. The *neutral sulphate* assumes the form of white crystals, which have the appearance of amianthus; little soluble in cold water, but quite so in boiling water. It possesses the remarkable property of becoming luminous, when heated to the temperature of 212° F. especially if submitted to slight friction. This was first observed by M. Callaud.

The *acid* or *bi-sulphate* of *quinine*, usually occurs in the form of transparent prismatic crystals, which are flat, quadrangular, handsomely terminated, and quite soluble in cold water.

According to M. Baup, the dry acid sulphate of quinine contains, acid sulphate—acid 18.181, base 81.819=100; neutral sulphate—acid 10, base 90=100; neutral sulphate invariably efflorescent—acid 9.57, base 86.12, water 4.31=100.

To obtain this efflorescent sulphate of quinine, it is necessary to expose the common sulphate to the open air, at the temperature of 68° F. Twenty-four hours is sufficient for the salt to become completely efflorescent, and it loses no more by a longer exposure.

It is this efflorescent sulphate, that M. Baup thinks it better to employ in therapeutics, as its composition is invariable. In fact, if the neutral sulphate is preserved in a moist place, it will only contain 76 of quinine in the 100; if, on the contrary, it be kept in a dry place, and in a phial loosely stopped, it will contain as much as 86. *Ann. de Chim. et de Phys.* Vol. xxvii. 329.

The high value of quinine as an article of the materia me-

dica, is properly appreciated in the following remarks of our author.

"It may be conceived what advantage must result in the treatment of diseases, to know, precisely, the dose of an active substance which is employed, and this advantage is no where better marked, than in the case in which we are now engaged, since the quantity of alkalies contained in the barks vary prodigiously, according to the nature and quality of the barks which are employed. We are, besides, often very happy to be able to administer this remedy in so small a volume, and under a form not at all obnoxious. It has been seen, in destructive fevers, that patients perish from this alone; not being able to swallow the necessary quantity of barks in powder; others vomit it up, after having taken it; some take on excessive purging, so that the powder passes the intestinal canal, without producing any effect. In the most favourable cases, it is necessary that the stomach of the patient should analyze chemically, so to say, the bark with which it is filled, and from which it must extract the febrifuge principle; but this labour is always difficult and fatiguing, even to the strongest stomachs; it is, then, a real service which chemistry has rendered to medicine, in having found means to make this separation previously." P. 47 and 8.

It would be entirely useless to advert particularly to the proofs advanced by our author, concerning the utility of the quinine in intermittent fever. The disease may be said to be entirely under the control of this remedy. We would remark, however, that the powers of the article can scarcely be judged of, unless it is given in large doses; and many supposed cases of failure, throughout the country, have undoubtedly been owing to a want of boldness in its employment. Many fevers which have continued under the employment of two or three grain doses, have been completely arrested by the use of 15 or 20 grains at a dose.

The sulphate of quinine is also employed, with great success, in fevers of a low and putrid type, and also, in arresting the progress of gangrene.

Concerning *cinchonine*, little need be said. If it possesses tonic and febrifuge powers, as has been asserted, it certainly

possesses them in a less degree than quinine, and it will, therefore seldom be employed.

VERATRINE.—This vegetable alkali was discovered by Pelletier and Caventou, in the seeds of *veratrum sabadilla*, and in the roots of *veratrum album* and *colchicum autumnale*; plants all belonging to the same family.

Veratrine is white, pulverulent, excessively bitter, inodorous, fusible at 122° F., almost insoluble in cold water, soluble in a thousand parts of boiling water, very soluble in alcohol, and but slightly so in ether. It combines with the acids, forming salts, which, upon evaporation, assume the appearance of gum. The sulphate is the only one which shows the least tendency to crystallization.

*Action upon the animal economy.*—When introduced into the nostrils, veratrine produces violent sneezing, which continues for some time. A few grains introduced into the stomach, occasion inordinate vomiting, irritate the mucous membrane, and sometimes even produce death.

"This substance producing the same effects as the plants from which it is obtained, may, therefore, be substituted for them, and with much advantage, since we know, in this case, what we are ignorant of in the other, the quantity of active substance which we make use of." It is also recommended, in those cases where it is necessary to excite, promptly, full alvine evacuations.

The following formulæ are offered by Majendie:

*Pills of veratrine.* ℞ Veratrine, ½ grain,
Gum arabic and syrup of gum,

a sufficient quantity to make six pills of one grain each. One of these pills may be first given, and if the purgative effects are not obtained, three may be given in a day.

*Tincture of veratrine.* ℞ Veratrine, 4 grains,
Alcohol, 1 ounce.

This tincture is administered in the dose of 10, 15, 20, and 25 drops, in a cup of drink. It may be given, internally, with advantage, instead of the tincture of colchicum, in dropsy, in leucophlegmasia, and anasarca; and to the exterior by friction, in those same diseases, and in gout.

HYDROCYANIC or PRUSSIC ACID.—This substance was discovered by Scheele, in 1780; but it is to Gay Lussac that we are indebted for a knowledge of it, in a state of purity. It may be obtained by moistening the cyanide of mercury with muriatic acid, and distilling at a low temperature. The liquid thus obtained, is transparent, has a strong pungent odor, like that of bitter almonds, a sharp and irritating taste. It volatilizes so rapidly, as to freeze itself,—a property peculiar to this liquid.

Hydrocyanic acid, in its concentrated state, is one of the most deadly poisons with which we are yet acquainted. "One drop of it thrown into the gullet of the most vigorous dog, makes him fall stiff and dead, after two or three large, hasty inspirations. A few atoms of the acid applied upon the eye, produce effects almost as sudden, and besides, very similar. A drop of acid, diluted with a few drops of alcohol, injected into the jugular vein, kills the animal upon the instant, even as though he had been struck with lightning.

"In animals thus poisoned by prussic acid, traces of irritability of the muscles can hardly be found a few instants after death." p. 63.

Upon man, the effects of pure hydrocyanic acid are similar to those upon animals; even its vapour produces nausea, head-ache, and faintness, and should therefore be avoided. When properly weakened, it is recommended as a means of calming a too vivid irritability, developed in certain organs; such as in those cases where the irritability of the pulmonary organs is morbidly increased; also, in the treatment of hooping cough, of asthma, of nervous and chronic coughs, in the palliative treatment of phthisis. In the last disease, it is said, that a complete cure is often effected, when it is yet in its first degree. Proofs are also adduced in favour of the efficacy of this article in dyspepsia.

With regard to the mode of employing this article, it is remarked, that "the prussic acid, prepared according to the process of Scheele, has not the medicinal properties sufficiently constant, by reason that the process leaves it quite arbitrary to the preparator. It is best, then, to make use of the

prussic acid, prepared according to the process of M. Gay Lussac, after diluting it sufficiently. It is diluted with six times its volume of distilled water, or 85 times its weight. It is this mixture that is designated, under the name of medicinal prussic acid."

We subjoin a formula or two from our author.

*Pectoral mixture.*—℞ Med. prussic acid, 1 drachm.
Distilled water, 1 pound.
Pure sugar, 1½ do.

Make a mixture, of which give a pap spoonful morning and night. The dose of this mixture may be raised to six and even eight spoonfuls in twenty-four hours. It is necessary to shake the mixture every time it is given, without which the acid accumulates on the surface, which may cause serious inconvenience.

*Mixture* for *lotions.*—℞ Med. prussic acid, 2 drachms.
Lettuce water, 1 pint.

This mixture in which the dose of acid may be increased to four drachms, is used in external applications upon ulcerated cancers, and for injections in cases of cancer of the uterus.

Cyanide of Potassium.—A solution of this article is proposed as a succedaneum of prussic acid. In consequence of the great volatility of the latter, it is not always the same, and therefore leads to different results. On this account it has been thought that the cyanide of potassium might be advantageously substituted for it; the effects of which on the animal economy are always the same.

The process for obtaining the cyanide of potassium is quite easy. It consists in exposing to a heat a long time kept up, the ferrocyanate of potash. Then, the cyanide of iron is completely decomposed, and that of potassium remains untouched. The residue of this strong calcination constitutes a black solid mass, lamellated, which is nothing more than the cyanide of potassium, salted over by the iron and the carbon, while the cyanide of potassium is dissolved, and is transformed into the hydrocyanate of potash.

The action of the cyanide of potassium is similar to that of

prussic acid. When dissolved in eight times its weight of distilled water, it is converted into what Majendie denominates medicinal hydrocyanate of potash. This may be administered in the same doses and in the same preparations as the prussic acid.

The cyanide of zinc, and the cyanide of iodine, are also proposed as remedial agents by Majendie. But the former of these, is in no respect preferable to the cyanide of potassium; and the latter has not been sufficiently examined to ascertain its mode of action.

Solanine.—This alkali was discovered by M. Desfosses, in the berries of *solanum nigrum* (deadly nightshade,) and in the leaves of *solanum dulcamara* (bittersweet.) When pure it occurs in the form of an opaque white powder, sometimes pearled. It is destitute of odour, has a slightly bitter and nauseous taste, is insoluble in cold water and unites with acids, forming with them salts which are uncrystallizable.

When taken in small quantities, solanine produces a strong feeling of irritation in the throat; in larger doses it excited vomiting, which is soon followed by drowsiness and sleep. It may be used in those cases where the extract of nightshade or of bittersweet are indicated.

Two other alkalies are noticed in the Formulary, viz. delphine obtained from *delphiniium staphysagria*, and gentianine, obtained from *gen ana lutea*. Neither of these, however, appear to possess very marked medicinal powers.

Iodine.—This simple substance, discovered in 1812, is one of the most valuable additions to chemistry, as well as to medicine. It has been found to exist, not only in sea-weed, from which it was first obtained, but also in various mineral waters, particularly such as are sulphurous. It is not improbable, that it will be met with in some of the mineral springs so abundant in our country.

Iodine occurs under the form of small grey scales of feeble tenacity, and having the aspect of plumbago. At the ordi-

nary temperature, it is solid; but at about 350° F., it volatilizes, expanding into beautiful violet vapours.

Iodine combines with oxygen and hydrogen, when these gases are presented to it, in a nascent state; with oxygen, forming iodic acid; with hydrogen, hydriodic acid.

Hydriodic acid may be very conveniently procured by pouring water upon the iodine of phosphorus. The water is decomposed; its oxygen combining with the phosphorus and forming phosphoric acid; its hydrogen uniting with the iodine, and giving rise to hydriodic acid. The liquor is now to be distilled; the first portions are to be rejected, being only water; the last, on the contrary, are pure hydriodic acid. The phosphoric acid which is also formed, remains at the bottom of the retort.

This acid combines with numerous bases and forms neutral salts; of which, those most commonly employed in medicine are, the hydriodates of potassa and soda. They are deliquescent salts, and consequently, very soluble in water. For obtaining them, several methods are detailed in chemical works.

We shall draw from the Formulary, a catalogue of the cases in which iodine has been successfully employed. It was first used as a remedy, by M. Coindet, physician at Geneva, in the treatment of goitre, in which it was attended with marked success. From the observations which have since been so often repeated, in various countries, it results, that we have in iodine an efficacious remedy against a disease which has sometimes shown itself so obstinate. Neither is it in recent cases alone, that we are to expect benefit from this article. It has been known to dissipate old goitres, hard and voluminous; but these, of course, require a longer time.

Iodine has been employed, with equal success, in the treatment of scrofula. M. Baup has cured, by the use of iodine, old scrofulous ulcers, and Majendie asserts, that he has obtained, by this means, the resolution of very considerable glandular enlargements. And from some cases which are related, it would seem that it had some power over scirrhus

and carcinoma of the uterus, over cancerous affections generally, and also over white swelling.

The efficacy of iodine in phthisis, suppression of the menses, tabes mesenterica, and chronic enlargement of the liver, is not so well established; although the reports in its favour are such as to warrant its trial in these diseases.

We subjoin some formulas for the administration of iodine, proposed by Majendie.

*Tincture of iodine.* ℞ Acohol. 1 ounce,
Iodine, 48 grains.

This tincture should not be prepared long before it is used, because it soon deposits crystals of iodine, and is further likely to decompose the alcohol. It is given to adults in doses of 4 to 6 drops, three times a day, in half a glass of sugar and water; it may be augmented, progressively, up to 20 drops, three times a day.

*Soduretted sulphuric ether.*

℞ Sulphuric ether, 1 grain,
Pure iodine, 6 grains.

Thirty drops contain one grain of iodine. The dose should seldom exceed 10 drops.

*Solution of hydriodate of potash.*

℞ Hydriodate of potash, 36 grains,
Distilled water, 1 ounce.

These preparations, the mode of administration of which is similar to that of the tincture, are employed like it in the treatment of goitre and scrofula; in the latter case, there is usually associated with it some medical tonic.

*Ointment of hydriodate of potash.*

℞ Hydriodate of potash, 30 grains,
Ungt. simplicis, 1½ ounce.

The dose of this ointment, which is used in friction, morning and evening, in goitre and enlarged scrofulous glands, is half a drachm for each time. In about eight days it may be carried to a drachm, and even more, according to the age of the subject and the extent of the tumour.

The *iodine of mercury* has been proposed as a remedy

against syphilis, but its medicinal properties have not been well determined.

Concerning the *lupuline* of Dr. Ives, which he regards at the same time aromatic, tonic, and narcotic, Majendie remarks: "I have found nothing very precise in this respect. I have made several attempts, both with the lupuline in substance and different preparations of it, upon animals, and have not found it was narcotic. This property, nevertheless, is the easiest to ascertain in experiments upon animals." p. 153.

The remaining part of the work before us is devoted to the notice of *croton oil*, *piperine*, or the active principle of piper nigrum, *urea*, the *oil of euphorbia lathyris*, *lactucarium*, and the salts of gold and platina. With one or two exceptions, these articles are of trifling importance in a medicinal point of view, and as our remarks and extracts have already been drawn out to a considerable extent, we shall not notice them particularly at present. Hereafter, we may have occasion to advert to this subject, with a view of noticing a few other medicinal articles, which have not been introduced into general use.

In conclusion, we recommend the work of Majendie to the attentive perusal of physicians; and we are confident that they will find the greatest benefits in their practice from the judicious employment of many of the new remedies which he has proposed.

# QUARTERLY HISTORY

OF

# IMPROVEMENTS IN MEDICINE AND SURGERY.

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## Foreign.

### ANATOMY AND PHYSIOLOGY.

*Extirpation of the Kidnies, and its consequences.*—Professor Mayer, of Bonn, has lately published a memoir on this subject, in which, besides noticing the directions of older writers, he details ten experiments made by himself. The following results are deduced.

1. The death of the animal follows in a short time (from 10 to 13 hours) after the extirpation of both the kidnies.

2. The principal nervous symptoms observed after the operation, are trembling, cries indicative of internal pain, and convulsions immediately preceding death.

3. The pulsation of the heart is diminished one-third, and in some cases one-half. Respiration is also greatly weakened.

4. These symptoms appear to be the result of a mætastastic secretion of a liquor analogous to urine.

5. After the extirpation, a serosity, which has all the characters of an urinous liquid, is secreted in the various secreting organs—particularly in the abdominal and thoracic cavities—the pericardium—the ventricles of the brain—the conjunctiva of the eye and the mucous surface of the stomach and intestines. It also appears in the cellular tissue of the liver, lungs, muscles, testicles, &c.

The quantity of this serosity was too small to submit it to chemical analysis.

6. Death seems to be the consequence of a translation to the brain and nervous system, of the urinous liquid which is present in the blood, and is unable to secrete itself in the natural manner.—*Bulletin des Sciences Medicales.*

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### PATHOLOGY.

*Jaundice.*—Andral, in one of his late publications, has advanced the idea that this disease is not always owing to the presence of bile in the blood, but in some instances is occasioned by a kind of ecchymosis into

the reticulated texture of the skin. He imagines, that many cases of yellowness in yellow fever, and in children newly born, may be thus explained.—*Ibid.*

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*Splenitis.*—Dr. Krause, of Berlin, has lately published two cases of idiopathic inflammation of the spleen, which deserve attention from the absence of the ordinary symptoms as enumerated by authors. The subject of the first case, was a military officer, of good constitution, and aged 32 years. He was suddenly attacked, and died on the fourth day. The leading symptoms were a derangement of the digestive functions, with a constant nausea and bilious vomitings. A yellow coat on the tongue, incessant thirst, pain in the head, violent periodical delirium, a dry and burning skin, high coloured urine, obstinate constipation, and, in fine, all the symptoms of inflammatory fever. The abdomen was neither hard nor painful, except a distressing tension in the region of the spleen, increased by pressure, and a sense of fulness in the epigastrium. There was severe pain in the chest, unaccompanied with cough, but a sense of oppression obliged him to lie on his back. Lastly, hiccup.

On dissection, the abdominal cavity was found filled with coagulated blood, the spleen was ruptured and its parenchyma black and friable, while the viscera of the thorax and abdomen, together with the brain, were in a healthy state.

The second case was an individual of 40, also of a good constitution. The symptoms were similar, but its event was more happy. He was bled fourteen times in the course of three weeks, and leeches were applied to the region of the spleen. Calomel was exhibited internally and applied externally. At the end of the above period, the patient had an attack of intermittent fever of the tertian type, which yielded to a few grains of sulphate of quinine.

In neither of these cases was there severe pain in the region of the spleen, or in the left shoulder, while the skin and urine were not yellow. —*Ibid.*

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*Goitre.*—Dr. Angelot, in a memoir read before the Royal Academy of Medicine at Paris, states that soldiers stationed in the Alps were generally seized with this disease, but it yielded with great readiness to the application of an ointment of hydriodate of potash.—*Ibid.*

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*Intestinal Calculus.*—Caventou reported to the Academy the case of a female aged 56, who had suffered under constipation during her whole life, and had been four times seized with iliac passion. After much suffering, a calculus was voided, which, on analysis, proved to consist almost entirely of cholestorine. The health of the female rapidly improved after this discharge of a "*human bezoar*," as the reporter styles it.—*Ibid.*

## SURGERY.

*Treatise on Bandages and Dressings.*—Mr. Gerdy, a French surgeon, has lately published a Treatise on this subject, accompanied with an Atlas of twenty quarto plates. He particularly figures all the different kinds of bandages.

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*Singular Tendency to union of the Lips.*—Dr. Bondi, a German physician, relates a melancholy case of a young person, aged 12, of a scrofulous habit, and debilitated by a sedentary life and poor nourishment. His malady commenced with an ulcer on the gums, which was treated with various remedies. During this, the lips inflamed and ulcerated through their whole extent, and the mouth began to contract. In a short time, its aperture was so small, that an incision was necessary. It however closed again, and this it did repeatedly, without any permanent benefit from various operations. The parts being in a scorbutic state, a healthy cicatrization could not be effected. The union of the lips was at last so complete, that the head of a pin could barely be passed. An operation was again performed, but a few days thereafter the unhappy patient expired in an asthmatic attack.

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*Incontinence of Urine.*—Dr. Lair communicated to the French Academy of Medicine, three cases of incontinence of urine cured by the immediate and momentary application of tincture of cantharides to the neck of the bladder. The tincture was introduced by means of a sound.

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## MATERIA MEDICA.

*Tape Worm.*—The following prescription is recommended in Hufeland's Journal as efficacious in the treatment of this tedious disease.

| | | |
|---|---|---|
| ℞ | Terebinth venet : | ℥i. |
| | Saponis Jalappini, | ℥ss. |
| | Ext. Hyoscyam. | grs. iv. |
| | Calomel, | grs. viii. |

M. form. pilul. pond. grs. ii.

Four of the above pills to be taken every three hours, interposing some simple drinks to aid their operation. Their use may be continued for two or three days. It is added, that Dr. Wilde, of Prague, cured two cases by it, in both of which the worm was expelled on the second day. An instance equally successful has occurred at the Polyclinic Institute of Berlin.

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*Phosphate of Lead in Consumption.*—Many of the German physicians are very partial to acetate of lead in tuberculous consumption. Doctor Hoffman, of Darmstadt, recommends the phosphate as a substitute, and particularly because it does not decompose so readily. *He advises a grain*

*a day, with extract of henbane*, and states that he has frequently witnessed its good effects.

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*Chloruret of Lime in Burns.*—Lisfranc has used this remedy with great success in various kinds of burns. In some he applies it immediately after the accident, in others after using emollient cataplasms. Lint, dipped in a solution more or less diluted, is laid over the usual applications of cerate.

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## OBSTETRICS.

During the last year, a Journal of the Obstetric Art has appeared in Germany, edited by some twenty of the most distinguished accoucheurs, residing in the various principal cities. We will only mention the names of Osiander, Carus, Nebel, Naegele, and De Froreip. From an analysis of the first number published in the Bulletin, we extract the following.

*Poisoning of a pregnant female with Opium.* (By Professor Outrepont.)—This female took voluntarily seven or eight ounces of *opium* in substance. Her life was however saved. Delivery followed in three days thereafter. The child, whose skin was of a bluish black colour, died shortly after birth, in a convulsive fit. The mother gradually recovered her health, though her mental faculties were for a length of time enfeebled.

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*Remarkable Precocity.* (By the same.)—A female child at birth was twenty-three inches long, and weighed two and a half pounds more than an ordinary infant. Four teeth appeared on the thirteenth day. During the seventh month it refused to take any more nourishment from the breast of the mother. In the ninth month, the menses appeared, preceded by diarrhœa and colic, and hair was seen on the pubes. She had now eight teeth, and long brown hair, and her height was that of a girl three years old. At fourteen months, four dog teeth appeared, and at the nineteenth month, she measured two feet six inches, and weighed fifty-fifty-four (Vienna) pounds. Her strength was in proportion, and her temper very irritable. The breasts developed at nine years, and her height then was four feet. There was no appearance of "genital instinct," but at eleven years, she became serious. Her height continued increasing. At the age of twelve years and two months she died of an attack of miliary fever.

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*Delivery effected by Gastrotomy.*—This case is related by Dr. Schenck, of Siegen. The female had some time previous undergone the Cæsarian Operation with success. During the present labour, a rupture of the uterus occurred at the cicatrix left by the operation. Gastrotomy was not performed until the second day thereafter, nor until all the symptoms indicated the presence of the fœtus in the abdominal cavity. It was found dead and extracted. The wound healed kindly, and in a month the female was deemed cured.

*Practice of Midwifery in Japan.*—Dr. Siebold, at Nangasacki, in Japan, states that it is a very common practice in that country to use frequent friction along the lower part of the abdomen of pregnant females. The native practitioners have rendered this popular, from an idea that it will cause an easy delivery.

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## CHEMISTRY.

*Test of Nitric Acid.*—Dr. Liebig proposes the following process for detecting the presence of nitric acid. The fluid to be examined is to be mixed with as much sulphate of indigo as will give it a distinct blue colour, and after adding a few drops of sulphuric acid, the mixture is to be boiled.

If the fluid contains a nitrate, the blue colour will be discharged, or only rendered yellow if the quantity of nitrate is very minute. Dr. Leibig states, that by this process nitric acid may be detected when there is not more than a four-hundredth of it present; by adding a little common salt to the fluid before applying the heat, even a five-hundredth of nitric acid may be readily detected.—*Ann. de Chimie*, xxxv. 80.

[The experiments of Sir Humphry Davy rendered it probable that Alumina was a metallic oxide; but its base *Aluminum*, has not to our knowledge, been hitherto obtained in such a state as to make its properties an object of investigation. The following article will, therefore, be highly interesting to our chemical readers.—*Edit. N. Y. Med. & Phys. Jour.*]

*Metal of Alumina.*—M. Oersted is stated to have obtained the metal of alumina by employing the chloride of that earth. Pure alumina is heated to redness, and then intimately mixed with powdered charcoal; the mixture is introduced into a porcelain tube, and after heating to redness, dry chlorine gas is passed over it. The charcoal reduces the alumina, the metal combines with the chlorine, and the oxide of carbon is also formed. The chloride of aluminum is soft, crystalline, and evaporates at a little above the temperature of boiling water; it readily attracts moisture from the air, and becomes hot when water is added to it. By mixing with an amalgam of potassium, containing much of the latter, and immediately heating the mixture, chloride of potassium is formed, and the metal of alumina combines with the mercury. The amalgam quickly oxidizes by exposure to the air. Being subjected to distillation out of contact of air, the mercury is volatilized, and a metallic button is left, which has the colour and splendour of tin. M. Oersted has ascertained many properties belonging to the new metal and its amalgam, which he promises to publish speedily.—*Hensman's Repertoire de Chimie, &c.*

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*Cynopia, a new Vegetable Alkali.*—Professor Ficinus, of Dresden, has discovered a new alkali in the *Aethusa Cynapium Linn*, (Fool's parsley) to which he has given the name of Cynopia. It is crystallizable, and soluble

in water and alcohol, but not in ether. The crystals are in the form of a rhombic prism, which is also that of the crystals of the sulphate.—*Hensman's Repertoire.*

[The above is announced in the November Number of the London Philosophical Magazine, as a new alkali in *hemlock.* This common name, however, is generally applied, in this country, to two other plants, viz. *Cicuta maculata, Linn.* and *Conium maculatum, L.* We mention this as another proof of the necessity of calling plants by their scientific instead of their common names.—*Edit. of N. Y. Med. & Phys. Jour.*]

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*Dracine.—A new substance found in Dragon's Blood.*—M. Melandri finds that the colouring matter of dragon's blood is soluble in alcohol and oil, and also in hot water, but in small proportion: the aqueous solution is bitter, astringent, and of a fine purple colour; by cooling it becomes opake and red. By the tests of gelatine and sulphate of iron, it does not appear to contain either tannin or gallic acid.

A portion of dragon's blood was dissolved in strong alcohol, the solution was evaporated until it was much concentrated, and then poured into cold water, but in which a spongy mass was precipitated; this, after being washed with cold water was saturated with water containing one-hundredth of sulphuric acid, and at about 61 deg. Fahr. chemical action appeared to occur. The sediment being well washed with water, was of a fine red colour, varying according to the state of aggregation; it was tasteless and inodorous, flexible, and became fluid at 131 deg. Fahr. This substance, called by the discoverer *Dracine*, has some analogy with the vegetable alkalies, although its affinity for acids is but slight. The sulphate is obtainable by adding sulphuric acid diluted with alcohol to an alcoholic solution of dracine, precipitating the mixture by cold water, and then applying a little heat; the sulphate of dracine collects at the bottom, and is to be washed with cold water until litmus paper ceases to be reddened by the washings; it is then to be dissolved in hot water. The solution is reddened by the smallest quantity of alkalies, and may be used as a very sensible test of their presence. Dracine is also a good test for acids, being rendered yellow by them. The smallest quantity of carbonate of lime in filtering paper may be detected by sulphate of dracine, the yellow solution instantly becoming red by its action.—*Bulletin Univ.* c. xi. p. 157.

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At the sitting of the Royal Academy of Sciences of Paris, June 11th, 1827—a prize of 10,000 francs was adjudged to MM. Pelletier and Caventou, for the discovery of the sulphate of quinine. Another of the same amount to M. Civiale, as being the first who had practised the breaking of the calculus in the living subject, and who had operated with success upon many persons. This prize was founded by M. de Montyon, "to those who have improved the healing art."

***On the Taste of Arsenic.***—At the trial of Mrs. Smith for poisoning her servant, held in the Justiciary Court here in February last, the professional gentlemen who were examined, differed as to the taste of arsenic. It is singular, that a difference of opinion should exist on a fact of so much importance and apparently so easy to settle: yet this is not the first occasion on which scientific men have differed regarding it. On referring to systematic authors, in Chemistry and Medical Jurisprudence, it will be found, that arsenic is invariably said to have an acrid taste. But it is well known, that systematic writers are too apt, especially on points apparently simple and trivial, to quote from one another, without personal experiment. And accordingly, when a reference is made to such medico-legal authors as have written especially on arsenic, or to the evidence of persons who have taken it when administered with articles of food, we find that some say the taste is sweetish, others that it is first sweetish and then acrid, others that it is sweetish and acid, and others *that it has no taste at all.* The natural inference is, that the taste, whatever it actually is, must be weak; so that, in fact, the poison may be swallowed without any taste being perceived. We have been informed by Dr. Christison, Professor of Medical Jurisprudence in this University, that, in reference to the evidence of Mrs. Smith's trial, he has recently made some experiments on the subject, and that others have been made, at his request, by Dr. Duncan, jun. and Dr. Turner and other two gentlemen, and the following is the general result.—The quantity of the solid poison tasted, from two to four grains; and the duration of the tasting from half a minute to a minute and a half. Two only *thought* they perceived, towards the close, a very faint sweetish taste; the rest declared the powder to be tasteless. As to the solution, its taste appeared to most to be very faintly sweetish. What may be its taste, when allowed to pass to the root of the tongue, it is not easy to determine, as the experiment made with sufficient quantity would be unsafe. But it has certainly been swallowed without the person remarking any particular taste at the time; and the most common account has been that it tasted sweetish. The particulars may be seen in a paper in the Edinburgh Medical and Surgical Journal for this quarter.—*Jameson's Edinburgh New Philos. Jour. for June* 1827.

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## MEDICAL JURISPRUDENCE.

*On the Detection of Antimony in Mixed Fluids.* By Edward Turner, M. D. F. R. S. E. Fellow of the Royal College of Physicians, and Lecturer on Chemistry, Edinburgh.—Having been recently engaged, along with Dr. Christison, in examining some food supposed to contain tartar emetic, I was led to inquire into the comparative value of the tests recommended for detecting that substance; and as, on perusing the investigation, I found reason to distrust the method described in our best works on toxicology, and at the same time succeeded in rendering it more secure, I am induced to believe that a short account of my experiments will not be unacceptable to the public.

Many re-agents decompose tartar emetic, and cause precipitates in its solution. Of these the principal are alkaline substances, the stronger acids, such as the muriatic and sulphuric, the infusion of gall-nuts, and sulphuretted hydrogen. The value of these tests is very unequal. Pure potash, when cautiously added to a strong solution of tartar emetic, occasions a pretty copious flocculent white precipitate, which is readily and completely re-dissolved by an excess of the alkali. In a moderately dilute solution potash does not produce any change. Pure ammonia in a concentrated solution throws down a white, very fine, granular precipitate, which adheres firmly to the glass, and is only partially re-dissolved by an excess of the precipitant. Tartar emetic is not precipitated by carbonate of ammonia. The fixed alkaline carbonates and lime-water act with considerable delicacy. In a solution containing a grain of tartar emetic to an ounce of distilled water, carbonate of potash and lime water yield distinct white precipitates, that from the former being the protoxide of antimony with a little carbonic acid, and that from the latter consisting of the tartrates of antimony and lime; whereas in the same liquid pure potash produces no change, and ammonia a cloudiness scarcely visible. When the tartar emetic is in the proportion of one grain to two ounces of water, lime-water has no effect, but the carbonate of potash still gives rise to a precipitate. If the proportion is a grain to four ounces of water, the action of the alkali can no longer be traced.

The delicacy of muriatic or sulphuric acid as a test of tartar emetic, is almost exactly the same as that of the carbonate of potash; but the acid must be added cautiously, as an excess of it re-dissolves the precipitate.

The recent infusion of gall-nuts produces a copious yellowish white precipitate in a concentrated solution of tartar emetic. The liquid is rendered turbid, when the proportion is two grains to an ounce; but it undergoes no change when the tartar emetic is in the ratio of one grain to an ounce of water.

Sulphuretted hydrogen acts with far greater delicacy and certainty than any of the others. On transmitting this gas through eight ounces of water containing one grain of tartar emetic, the solution instantly acquired an orange colour; and after saturating the liquid with the gas, and boiling in order to expel the excess of it, a considerable quantity of the sulphuret of antimony quickly separated.*

From these experiments it fully appears, that of all the tests of tartar emetic enumerated by toxicologists, sulphuretted hydrogen is the only one which is sufficiently delicate for being entitled to confidence. It is the only one, also, the indications of which as to the presence of antimony are

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* This precipitate is commonly, but I conceive incorrectly, regarded as a hydrosulphuret of the oxide of antimony. It appears rather to be a hydrated sulphuret of the metal.

precise. The orange tint of the precipitated sulphuret of antimony can scarcely be mistaken for any other metallic sulphuret by a person acquainted with its appearance. Its colour is quite different from that of orpiment or of the bisulphuret of tin; and from the sulphuret of cadmium, to which it bears a great resemblance, it is distinguished by its ready solubility in a solution of pure potash. On the contrary, the other tests, taken singly, supply no proof whatever of the presence of tartar emetic; though, when they all agree in their indications, their evidence is not likely to be deceptive.

In describing sulphuretted hydrogen as a test of tartar emetic, it is almost unnecessary to state that this gas merely indicates the presence of antimony, without directly showing in what state it existed. But since tartar emetic is the only pharmaceutic preparation of antimony which is soluble in water, the detection of the metal itself, in judicial cases, leaves little doubt of its having been in the form of the double tartrate. This, however, is not a point of much importance, because all soluble antimonials are poisonous.

In order to ascertain if sulphuretted hydrogen may be relied on for discovering the presence of antimony in complex animal and vegetable fluids, tartar emetic, dissolved in water, was mixed with tea, broth, porter, and milk, in such quantity that each solution amounted to four ounces, and contained two grains of the compound. Through these solutions, after being acidulated with tartaric acid, boiled and filtered, a current of sulphuretted hydrogen gas was transmitted during fifteen or twenty minutes. In the three first liquids an abundant precipitation ensued immediately, and the same took place in the milk after boiling. The precipitate subsided easily from each, and the colour of that from the tea, broth, and milk, was quite characteristic. That procured from the porter was not so satisfactory at first; but on collecting and drying it upon a filter, the paper presented the distinct orange tint of the precipitated sulphuret of antimony.

In recommending the use of tartaric acid, I may observe that the employment of this substance should in no cases be omitted. According to my observation, all the precipitates occasioned in tartar emetic by reagents, sulphuretted hydrogen excepted, as well as by animal or vegetable fluids, are readily dissolved by tartaric acid. Thus the precipitates occasioned by lime-water, or muriatic acid, disappear instantly on the addition of tartaric acid; and the compound of tannin and the oxide of antimony, whether formed by the infusion of gall-nuts, tea, or cinchona bark, may easily be rendered soluble by the same means. If milk is present, muriatic acid should likewise be employed, by which the coagulation of the caseous matter is more completely effected. In order, therefore, to form a rule applicable to every case, the following directions may be given: The fluid supposed to contain tartar emetic should be mixed with a drachm or two of muriatic and tartaric acids, boiled for a few minutes to separate any substance coagulable by heat, and then allowed to cool, and filtered. The liquid should next be exposed to the action of sulphuretted hydrogen, and

boiled to expel the excess of the gas; after which the sulphuret will subside if tartar emetic had been present.

After procuring the sulphuret of antimony by the process above described, it is important to subject the compound to some operation by which the metal may be obtained in a separate state. Professor Orfila, in his work on Toxicology, (Vol. i. p. 465, third edition,) states, that the precipitate in question, "dried on a filter, and mixed with charcoal and the potash of commerce, gives a button of metallic antimony by the action of heat. This reduction of the oxide of antimony by charcoal may be made in an earthen crucible, and is completed in the space of about ten or twelve minutes." It is chiefly to this part of the process for detecting antimony that I have found reason to object. I do not, indeed, deny that the process will succeed perfectly, when a considerable quantity of the materials is employed; but in operating on such quantities as are likely to be met with in medico-legal investigations, my attempts to procure the metal in this way have proved completely fruitless. Thus, four grains of the sulphuret, precipitated from tartar emetic by sulphuretted hydrogen, and well dried, were mixed with an equal weight of charcoal and dry carbonate of potash. The mixture, protected on all sides by charcoal, was placed in a Hessian crucible, carefully luted, and was then exposed to heat during fifteen minutes. The experiment was twice repeated; and on one occasion a full red, and on the other a commencing white heat was employed, but in neither case could I perceive any trace of the metal. On examining the residue chemically, I found that some particles of metallic antimony were diffused through the mass, though they could not be discovered by the eye; while another portion still remained as sulphuret, and was dissolved by the potash on the addition of water. These experiments were varied by mixing the sulphuret with black flux, and heating the mixture in a glass tube by means of a spirit lamp; but a metallic globule was not procured, though the heat was augmented by aid of the blowpipe. It is worthy of remark, that in none of these trials was there any appearance of a metallic sublimate; so that, were colour insufficient for distinguishing orpiment from the sulphuret of antimony, the black flux would afford an easy mode of distinction.

Having failed in my attempts to procure the metal by the preceding process, I had recourse to another which proved successful. It is founded on the property hydrogen is known to possess, of separating sulphur from antimony at an elevated temperature,—a property, of which advantage has been taken for the purposes of analysis. In performing this operation, the dry sulphuret is placed in the middle of a glass tube about three inches long, and a quarter of an inch in diameter. One end of the tube is connected by means of a cork with a vessel, from which hydrogen gas is evolved; and to its other extremity is adapted a bent tube, which opens under water, so as to conduct away the hydrogen, and at the same time exclude atmospheric air. After the air within the apparatus has been expelled, heat is applied by means of a spirit lamp to the part of the tube on which the sul-

phuret is placed. The decomposition of the sulphuret commences at a temperature by no means elevated; but in order to render it complete and fuse the antimony, the glass should be made red hot, and kept in that state for five or six minutes. The temperature at the close of the process may with advantage be increased to bright redness by the use of the blowpipe.

The appearance of the metal within the tube depends upon the manner of conducting the experiment. If the sulphuret had been placed in a heap, the metal is found partly in a spongy state, and partly in minute globules; but if it had been diffused over a considerable space, no globules appear, and the metallic lustre is indistinct. The metallic nature of the spongy mass, may, in general, be brought distinctly into view by placing it on a piece of white paper, and pressing it with the nail or the blade of a penknife.

The result also depends on the velocity with which the hydrogen is transmitted through the tube. If the gas passes rapidly, some of the metal is hurried off at the moment of separation from the sulphur, and is deposited within the tube as a metallic film, which is sometimes very distinct. If, on the contrary, the passage of the gas is slow, this appearance does not take place.

By means of this process, I have succeeded in procuring from the tenth of a grain of the sulphuret metallic antimony, the lustre of which could be distinctly seen with the assistance of a lens. From half of the precipitates procured from the mixture of two grains of tartar emetic with broth and milk, I procured distinct metallic globules.

Should a considerable quantity of animal or vegetable matter subside with the sulphuret, the metallic antimony will then be so mixed with charcoal that its lustre cannot be seen distinctly. This occurred to me in decomposing the sulphuret obtained from porter. In a case of this kind the mixture should be placed in an open tube, and heated to redness by means of a spirit lamp. The antimony is then oxidized, and the oxide, which attaches itself to the cool parts of the tube in form of a white powder, may be recognised by its appearance and volatility.—*Edin. Med. and Surg. Journ.*

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## MISCELLANEOUS.

*Diseases of Pavia.*—Dr. Hildebrand has lately published "Annals of the School of Clinical Medicine of Pavia." It is preceded by historical sketches. The scientific institutions of this city were founded by Charlemagne, in the 8th century, and they number among their benefactors Louis le-debonnaire, the Emperor Charles IV. the Empress Maria Theresa and her son Joseph.

Intermittent Fevers of the tertian type are very frequent. The humid atmosphere and marshy grounds sufficiently account for their occurrence. Bilious affections a common accompaniment. Indeed, diseases of the liver are stated by Dr. Hildebrand to be among the most common diseases. Dropsies also prevail. On the other hand, consumption is very rare, and

nervous diseases are seldom seen. The mortality in the "clinique" of Pavia during nine months, was in the proportion of 9 in 100.—*Bulletin des Sciences Medicales.*

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*State of Medicine in Norway.*—This country never had an independent scientific institution until the year 1811, when the King of Denmark founded the University of Christiana. Its faculty of medicine, (three professors) commenced their labours in 1814. To these has lately been added Professor Holst, who has written on *Radasyge*, a disease of Northern Europe, and also on the prisons of England. A civil, as well as a military hospital are attached to the institution. Examinations are required previous to the student commencing the study of medicine, and the other liberal professions, and two additional ones before they take the Degree of Doctors of Medicine.—*Ibid.*

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*Deaf and Dumb in the Canton De Vaud, (Switzerland.)*—By a very late enumeration, the following results have been obtained :

| | *No. of Deaf & Dumb.* | *No. of Inhabitants.* |
|---|---|---|
| District of Meudon, | 43 | 6602 |
| Payerne, | 25 | 6095 |
| Aubonne, | 20 | 6638 |
| La Vallee, | 12 | 3938 |
| Remainder of the Canton, | 52 | |
| | 152 | |

Of the whole number, sixty-six thirty boys and thirty-six girls) are in a state to receive instruction; seventy, (forty males and thirty females) either from age, disease, or imbecility, verging on cretenism, are incapable of receiving instruction, while sixteen (seven males and nine females) are in an intermediate state between the two. The success of education with them is doubtful. The first class are placed in the institution of M. Naeff, at Yverdun.—*Ibid.*

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*Inefficacy of Belladonna as a preservative against Scarlatina.*—Doctor Lehmann relates, that in 1825 an epidemic Scarlet Fever raged at Torgau, which was highly fatal. One in eight, of those seized, died. Belladonna, of the best quality, was punctually administered in several families where the disease raged, but with no beneficial result. The disease was as severe with those who took it, as those who omitted it.—*Ibid.*

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*Hoven Cattle.*—The gas found in cattle who have become swelled from eating green food, has generally been deemed carbonic acid. Mr. Pluger, of Soleure, in Switzerland, has recently analyzed some freshly taken from an animal. He found it to consist of carbonic acid gas three-fifths, and gaseous oxide of carbon two-fifths. This is the first instance in which the latter has been found as a natural product.—*Ibid.*

# UNIVERSITY REGISTER.

UNDER this title, as announced in our last, we propose giving a succinct History of what has been done by the constituted authorities of this state for the promotion of Medical Learning. We intend to comprise in it, a history of the *men and things* that have agitated our professional community for the last thirty years, and we shall do this, in all cases, with the aid of authentic documents. No assertion shall be made that cannot be substantiated by written or oral proofs; and we flatter ourselves, that the statements with which the public have for years been surfeited in pamphlets, "historical sketches," "guides," and "pictures," will find their true level, and be awarded to their *single* author. Our first number must necessarily be tedious, but its insertion is indispensable, in order to understand the organization of the Board of Regents of the University.

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In a very short time, after the completion of the war of independence, the attention of the Legislature of the state of New-York, was directed to the promotion of the great cause of learning and science. An act was passed on the 1st May, 1784, with the following title—

"*An Act granting certain privileges to the College, heretofore called King's College; for altering the name and charter thereof, and erecting an University within this State.*"

This law recites, that by letters patent under the great seal of the late colony of New-York, bearing date Oct. 31st, in the 28th year of George II. King of Great Britain, a certain body politic and corporate was created, by the name of the College of the province of New-York, in the city of New-York, with divers privileges and immunities. It adds, that there are many vacancies in the said corporation, in consequence of the death or absence of a great number of the Governors of the College, "whereby the succession is so greatly broken in upon, as to require the interference of the Legislature." And as the remaining governors, desirous to render the same extensively useful, have prayed that the said College may be erected into an University, and that such other alterations may be made in the charter, or letters of incorporation, as may render them more conformable to the liberal principles of the constitution of this state. It enacts as follows—

1*st Section.* That all the rights, privileges, and immunities, heretofore vested in the above College, so far as they relate to the capacity of holding or disposing of property, either real or personal, of sueing, or being sued, of making laws or ordinances for their own government, or that of their servants, pupils, or other individuals under their care and subject to their direction; of appointing, displacing, and paying stewarts and other inferior servants; of making and holding a common seal and altering the

same at pleasure, are hereby vested in the *Regents of the University of the State of New-York*, who are hereby created into a corporation or body corporate and politic. The said Regents are to consist of the following persons—

The Governor of the State, The Lieutenant Governor, The President of the Senate, The Speaker of the Assembly, The Mayor of the city of New-York, The Mayor of the city of Albany, The Attorney General, The Secretary of State, all for the time being and by virtue of their respective offices. Also,

Henry Brockhoslt Livingston, Robert Harpur, of the city of New-York.
Walter Livingston, Christopher Yates, county of Albany.
Anthony Hoffman, Cornelius Humfrey, county of Dutchess.
Lewis Morris, Philip Pell, jun. county of West-Chester.
Henry Wisner, John Haring, county of Orange.
Christopher Tappen, James Clinton, county of Orange.
Christopher P. Yates, James Livingston, county of Montgomery.
Abraham Bancker, John C. Dongan, county of Richmond.
Matthew Clarkson, Rutgers Van Brunt, county of Kings.
James Townsend, Thomas Lawrence, county of Queens.
Ezra L'Hommedieu, Caleb Smith, county of Suffolk.
John Williams, John McCrea, county of Washington.

It is also enacted, that the Clergy of the respective religious denominations in this state, may direct at such time and place as they may deem proper, after the passage of this act, and being so met, shall by a majority of voices present, choose and appoint one of their body to be a regent of the said University, and in case of his death or resignation, to choose and appoint another in the same manner; and the regent so chosen, shall have the like powers as any regent appointed or to be appointed by virtue of this act: And to the end that a succession of regents be perpetually kept up—

*2nd Section.* Whenever any regent not *ex-officio*, shall remove from the state, or shall resign or die, the Governor, with the advice and consent of the Council of Appointment, shall fill said vacancy, so that such appointments be of persons resident in the counties respectively wherein the former regents resided.

*3d Section.* The Regents are directed to choose a Chancellor, Vice-Chancellor, Treasurer, and Secretary, from among the said Regents. The Chancellor, or in his absence, the Vice-Chancellor to preside at all meetings, and to have the casting vote.

*4th Section.* The Regents, or a majority of them, are vested with full power to make ordinances and by-laws for the government of the several Colleges, which may compose the said University, and for the management of such estate as they may be invested with. They have also full power to determine the salaries of the officers and servants of the said College, and to remove from office any such president, professor, tutor,

fellow, or servant, as they conceive, after a full hearing, to have abused their trust, or to be incompetent thereto. Provided, however, that no fine to be levied shall exceed the value of one bushel of wheat, for any one offence, and that no pupil or student shall be suspended for a longer term than twenty days, or be rusticated or expelled but upon a full hearing by the Chancellor or Vice-Chancellor, and at least ten Regents, not being president or professors of the College to which the person accused belongs. The Regents are also directed to choose a president and professors for King's College, but are forbidden to demand any test oath from them, and no professor is to be accounted ineligible on account of any religious tenets he may profess.

*5th Section.* The estate formerly held by the corporation of King's College is to be held by the Regents for the use of the College, and the Regents are empowered to hold estate to the amount of £3500 per annum, for the use of said College.

*6th Section.* The Regents are empowered to hold real and personal estate to the annual amount of 40,000 bushels of wheat.

*7th Section.* Said Regents are empowered to found Schools and Colleges in any such part of the state, as may seem expedient to them, and to endow the same, *vesting such Colleges with full and ample powers to confer the degrees of Bachelor of Arts*, and directing the manner in which such Colleges are to be governed; "always reserving to the Chancellor or Vice-Chancellor of the University and a certain number of the Regents to be appointed by a majority of the said Regents, a right to visit and examine into the state of literature in such College, and to report to the Regents at large any deficiency in the laws of such College, or neglect in the execution thereof; every such School or College to be deemed a part of the University, and as such subject to the control and direction of the said Regents." Any School or College founded by any person or persons or body corporate, and endowed with an estate of the annual value of one thousand bushels of wheat, may, on application of the founder or founders, be considered as part of the said University, and the founders, or the body corporate and their heirs or successors may, for ever thereafter, send a representative for such College or School, who is to be considered as a Regent of the University. The President (if it be a College) is also to be a Regent.

*8th Section.* Whenever any religious body or society of men shall deem it proper to institute a professorship in the said University for the promotion of their particular tenets, or for any purpose not inconsistent with religion, morality, and the laws of the state, and shall appropriate a fund of not less than two hundred bushels of wheat per annum, the Regents shall so appropriate it, and the professors so to be appointed shall be subject to the like rules and ordinances as the other professors of the University, and entitled to the like immunities and privileges.

*9th Section.* "The Regents and their successors shall have full power

and authority by the Chancellor or Vice-Chancellor of the University, or any other person or persons by them authorized or appointed, to give and grant to any of the students of the said University, or to any person or persons thought worthy thereof, all such degrees as well in divinity, philosophy, civil and municipal laws, as in every other art, science, and faculty whatsoever, as are or may be conferred by all or any of the Universities in Europe." The Chancellor or Vice-Chancellor to sign all diplomas or certificates of such degrees, " other than the degree of Bachelor of Arts, which shall and may be granted by the President of the College in which the person taking the same shall have been graduated, and the diplomas shall be signed by the President." The persons to be elected fellows, professors, or tutors, as directed in a previous section, to be also Regents of the University *ex-officiis*, and capable of voting in every case relative only to the respective Colleges to which they shall belong, except in such cases wherein they shall respectively be personally concerned or interested.

10*th Section.* The College in the city of New-York, heretofore called King's College, shall for ever hereafter be known by the name of COLUMBIA COLLEGE.

It does not appear that any proceedings were held under this act, as during the next session of the Legislature another was passed, enlarging the board. The title is as follows—

*An Act to amend an act, entitled an act for granting certain privileges to the College, heretofore called King's College, for altering the name and charter thereof, and erecting an University within this State.*

Passed November 26, 1784.

In the recital it is stated, that whereas it is represented to the Legislature, that from the dispersed residences of many of the Regents of the University, and the largeness of the quorum who are made capable of business, the interest and prosperity of the said University have been greatly obstructed ; and it also represented that certain doubts have arisen in the construction of the act given above—Therefore for remedy, it is provided in the

*Sect.* 1. That in addition to the Regents appointed by the above act the following are constituted Regents of the University—John Jay, Samuel Provost, John H. Livingston, John Rodgers, John Mason, John Ganoe, John Daniel Gros, Johan Ch. Kunze, Joseph Delaplaine, Gershom Seixas, Alexander Hamilton, John Lawrence, John Rutherford, Morgan Lewis, Leonard Lispenard, John Cochran, Charles McNight, Thomas Jones, Malachi Treat, and Nicholas Romaine, of New-York ; Peter W. Yates, Mathew Visscher, and Hunlock Woodruff, of Albany; George J. L. Doll, of Ulster ; John Vanderbilt, of Kings ; Thomas Romaine, of Montgomery ; Samuel Buel, of Suffolk ; Gilbert Livingston, of Dutchess ; Nathan Kerr, of Orange; Ebenezer Lockwood, of West-Chester ; John

Lloyd, jun., of Queens; Hermanus Garrison, of Richmond; and Ebenezer Russel, of Washington.

*Sect.* 2. The Chancellor, or in his absence the Vice-Chancellor, or in the absence of both, the Regent next nominated in the act of May 1784, with any eight or more of the Regents, are to be a quorum, whose acts and proceedings shall be as valid as if all the members were actually present. To constitute a legal meeting, however, a notice by the Chancellor or the other persons alternatively named, shall be published for at least two weeks in one of the public newspapers.

*Sect.* 3. This orders an annual meeting of the Regents, at the time and place where the Legislature shall first be convened, after the first Monday in July in each year.

*Sect.* 4. The Clergy of each respective religious denomination in this state may meet, and by a majority of voices elect one of each of their respective bodies to be a Regent of the University, and in case of death or resignation, to elect successors, in the same manner, and every Regent so elected to have equal powers with any appointed by these acts.

*Sect.* 5. This appoints the time for the first meeting of the Regents.

*Sect.* 6. The Treasurer of the State is directed to advance to the Treasurer of the University for the use of Columbia College, the sum of £2,552.*

Whether an organization of the Board of Regents took place under this would seem doubtful. At all events we have not been able to obtain access to any records detailing their proceedings. And in less than two years another act was passed, repealing both those which we have noticed. This it will be observed, is in every material part, the same law which is now in force. It is entitled—

*An Act to establish an University within this State, and for other purposes therein mentioned.* Passed April 13, 1827.

It recites that from the representation of the Regents, there are defects in the existing law, which require alterations and amendment, and as a number of acts on the same subject, altering, amending, and correcting former ones, tends to render the same less intelligible and easy to be understood, therefore it is deemed expedient to present the Constitution of the University in a single law, and to repeal all former ones on that subject.

*Sect.* 1. Declares that an University is instituted within this state, by the name of "*The Regents of the University of the State of New-York.*" Said Regents to be always twenty-one in number, and of which the Governor and Lieutenant-governor, by virtue of their offices, shall always be two. The following persons are appointed Regents—

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* The above acts are copied from Holt's edition of the Session Laws of the State of New-York.

John Rodgers, Lewis Morris, Egbert Benson, Matthew Clarkson, Philip Schuyler, Benjamin Moore, Ezra L'Hommedieu, Eilardus Westerlo, Nathan Carr, Andrew King, Peter Sylvester, William Linn, John Jay, Jonathan G. Tompkins, Dirck Romeyn, John McDonald, James Livingston, Ebenezer Russel, Frederick William De Steuben.

The Regents are to continue in place during the pleasure of the Legislature. All vacancies to be supplied by the Legislature, in the manner in which delegates to Congress are chosen. The Regents are to convene at such time and place as the Governor shall appoint, and choose by ballot a Chancellor and Vice-Chancellor, to continue in office during the pleasure of the Regents. All meetings after the first to be held at the appointment of the Chancellor, or in his absence the Vice-Chancellor, or of both, of the Senior Regent present in the state. A meeting of the Regents is also to be called whenever three Regents desire it in writing—such call to be published in one or more of the newspapers in the city of New-York, at least ten days prior to such meeting. Eight Regents to constitute a quorum, and the Regents are empowered to hold property to the annual amount of forty thousand bushels of wheat.

*Sect.* 2. The Regents are to appoint by ballot a Secretary and Treasurer, who shall hold their offices during pleasure.

*Sect.* 3. The Regents are authorized and required to visit and inspect all the Colleges, Academies, and Schools which are or may be established in this state, and to make a yearly report thereof to the Legislature. (The remainder relates to their power of appointing presidents and principals when the trustees of Colleges or Academies shall leave their situations vacant for a year.)

*Sect.* 4. The Regents shall have the right of conferring by diplomas under their common seal, on any person or persons whom they may think worthy thereof, all such degree or degrees, above or beyond those of Bachelor or Master of Arts, as are known to and usually granted by any University or College in Europe.

*Sect.* 5. The Regents may apply (except in cases of special grants to them) their funds in such manner as they may deem most conducive to the promotion of literature, and the advancement of useful knowledge within this state.

*Sect.* 6. The Regents shall meet annually on the second Thursday next after the Senate and Assembly, at the annual session of the Legislature shall have formed a quorum respectively, and at the Assembly chamber immediately after the Assembly shall have adjourned. They may adjourn from time to time, not exceeding ten days at any one time.

*Sect.* 7. When any citizens or bodies corporate are desirous of founding a College, they shall make known in writing to the Regents, "the place where, the plan on which, and the funds with which it is intended to found and provide the same, and who are proposed for the first Trustees; and if the Regents shall approve thereof, they shall declare their approba-

tion under their common seal, and allow a convenient time for completing the same." If at the expiration of the said time, the Regents are satisfied that said plan is fully executed, they shall declare the said College incorporated, with such trustees as they shall name, not exceeding twenty-four, nor less than ten, and shall have perpetual succession, and enjoy *all the corporate rights and privileges enjoyed by Columbia College, herein after mentioned.*

*Sect.* 8. Confirms the charter granted to (now) Columbia College on the 31st October, 1754,* except, that the title is altered to Columbia College, and that no persons are to be trustees in virtue of any offices, characters, or descriptions whatever—excepting also, such clauses thereof as require the taking of oaths and subscribing the declaration therein mentioned, and which render a person ineligible to the office of president on account of his religious tenets, and prescribe a form of public prayer to be used in said College—also, excepting the clause which provides that the by-laws and ordinances to be made in pursuance thereof, should not be repugnant to the laws and statutes of that part of the Kingdom of Great Britain called England—except also, that in all cases where fifteen governors are required to constitute a quorum for the despatch of business, thirteen trustees shall be sufficient. Provided always, that the by-laws and ordinances to be made by the trustees of the said Columbia College, shall not be contrary to the constitution and laws of this state.

*Sect.* 9. Appoints twenty-nine persons to be Trustees of Columbia College; but directs that whenever the number is reduced to twenty-four, then said twenty-four are constituted Trustees in perpetual succession.

*Sect.* 10. Vests the powers, rights, and estates of Columbia College in the Trustees.

The remaining sections up to Sect. 20, do not require notice. They relate to the incorporation and government of Academies.

*Sect.* 20. No trustee, president, principal, tutor, or fellow of any College or Academy, shall be a Regent of the University.

*Sect.* 21. Whenever any person, now or hereafter, a trustee of any College or Academy, shall be appointed a Regent of the University, or when a Regent is elected a trustee, he shall elect in which of said places he will serve, and give written notice of the same.

*Sect.* 22. Repeals the acts of May and November, 1784.†

Under this act the present Board of Regents of the University was organized. The first meeting was held by appointment of his excellency George Clinton, governor of the state, at the Exchange, in the city of New-York, on the 17th of July 1787, and the following Regents were present—

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* We shall give a copy of this Charter in a future Number.

† Greenleaf's edition of the Laws of the State of New-York, vol. I. p. 434.

George Clinton, Governor ; John Rodgers, Egbert Benson, John Jay, Benjamin Moore, William Linn, Frederick William De Steuben.

Governor Clinton was elected Chancellor ; John Jay, Vice-Chancellor ; and Richard Harrison, Secretary.

At the winter session, several Academies were incorporated, and an annual report was presented to the Legislature. Proofs of their assiduous efforts to promote the cause of literature are manifest on every page of their early minutes. Nothing, however, relative to Medical Education, appears until the 13th of January, 1791 ; when the following entry is found—

"A Memorial of Nicholas Romayne relative to a Medical School, was read and committed to Dr. Moore, General Clarkson, and Dr. Rodgers."

As this Memorial in its consequences, led to the establishment of the present College of Physicians and Surgeons of New-York, we shall in our next give a detailed account of the proceedings relative to it.

[*To be continued.*]

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## QUARTERLY BIBLIOGRAPHICAL NOTICES.

1. *Eclectic and General Dispensatory, comprehending a System of Pharmacy, Materia Medica, the Formulæ of the London, Edinburgh, and Dublin Pharmacopœias ; Prescriptions of many eminent Physicians, and Receipts for the most common empirical Medicines. Collated from the best authorities.* By an American Physician. 8vo. Philadelphia. 1827.

A useful compilation for students.

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2. *Annals of the Lyceum of Natural History of New-York.* Nos. 9, 10, and 11.

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3. *The Western Medical and Physical Journal ; original and eclectic.* Edited by Daniel Drake, M.D, and Guy W. Wright, M.D. Nos. 6, 7, 8. In Exchange.

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4. *Philadelphia Monthly Journal of Medicine and Surgery.* Edited by N. R. Smith, M.D. Professor of Surgery in the University of Maryland. Philadelphia. Nos. 4, 5, 6. In Exchange.

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5. *Pathological Anatomy : the last Course of Xavier Bichat, from an autographic manuscript of P. A. Beclard ; with an account of the life and labours of Bichat, by F. B. Boisseau.* Translated from the French. By Joseph Togno, Student of Medicine. Philadelphia. 1827.

6. *The North American Medical and Surgical Journal.* Conducted by HUGH L. HODGE, M.D. FRANKLIN BACHE, M.D. CHARLES D. MEIGS, M.D. B. H. COATES, M.D. and R. LA ROCHE, M.D. Nos. 7 and 8. In Exchange.

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7. *Formulary for the Preparation and Employment of many new Medicines.* By F. MAJENDIE. Translated from the fifth edition, revised and augmented by JOHN BAXTER, M.D. with notes and additions. New-York, George H. Evans & Co. pp. 140. 1827. From the Translator. (See Review.)

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## MEDICAL LEGISLATION.

[The following regulations concerning the Practice of Medicine, were passed during the recent session of our Legislature. As they relate to subjects of general interest to the profession, we are induced to publish them in full.—*Ed.*]

### OF THE PUBLIC HEALTH.

CHAP. XIV.—TITLE VII.

*General Regulations concerning the Practice of Physic and Surgery in this State.*

SEC. 1. The president of every County Medical Society shall give notice in writing, to every physician and surgeon, not already admitted into such society, within the county in which the society of which he is president is situated, requiring such physician or surgeon, within sixty days after the service of such notice, to apply for and receive a certificate of admission, as a member of such society.

SEC. 2. The service of every such notice shall be made personally on the physician or surgeon to whom it shall be directed: and if such physician or surgeon shall not, within the time specified in the notice, or within such further time as may be allowed by the president, under the regulations of the society, apply for a certificate of membership in such society, his license shall be deemed forfeited, and he shall be subject thereafter, to all the provisions and penalties of the laws of this state in relation to unlicensed physicians, until, upon a special application, he shall be admitted a member of the medical society in the county in which he shall reside.

SEC. 3. If there shall be preferred to any county medical society, specific charges against any member thereof, of gross ignorance or misconduct in his profession, or of immoral conduct or habits, a special meeting of the society to consider the charges shall be called, of which at least ten days previous notice shall be given, in one or more of the newspapers printed in the county.

Sec. 4. If two thirds of the members present at such meeting shall be of opinion that the charges preferred are well founded, the president of the society shall, without delay, deliver a certified copy of the charges, and of the vote of the society thereon, to the district attorney of the county, and shall give notice of such delivery to the member accused, who from that time shall be suspended from the practice of physic and surgery, until the determination of such charges, in the manner hereinafter provided.

Sec. 5. The district attorney to whom the charges shall be delivered, shall serve a copy thereof without delay, on the member accused, and at the same time shall give him notice of the time and place at which the judges of the court of common pleas of the county will meet, for the purpose of hearing and determining the same: such notice shall be served at least fourteen days before the time of hearing appointed.

Sec. 6. The district attorney shall conduct the prosecution of the charges, and shall issue process to compel the attendance of such witnesses, as the president of the society and the member accused shall severally require.

Sec. 7. The judges of the county court, at the time and place of hearing appointed, or at such other time and place as they shall fix, shall proceed to hear and determine the charges, and shall examine, on oath, the witnesses produced: if they, or a majority of them, shall be satisfied, from the evidence, that the charges are true, they shall make an order, which shall be valid in law, expelling the member accused from the society, and delaring him for ever thereafter incapable of practising physic and surgery within this state, or suspending him from such practice, for a limited period: if they shall be of opinion that the charges are not established, the suspension of the member accused shall cease, and he shall be restored to all his rights and privileges as a practising physician and surgeon.

Sec. 8. No student shall be admitted to an examination by any medical society, until he shall have completed, with some physician and surgeon, duly authorized by law to practise his profession, the term of medical study prescribed in the following sections of this Title:

Sec. 9. The regular term of the study of medical science shall be four years, but a deduction from such term in no case to exceed one year, shall be made in either of the following cases:

1. If the student, after the age of sixteen, shall have pursued any of the studies usual in the colleges of this state, the period during which he shall have pursued such studies, shall be deducted.

2. If the student, after the age of sixteen, shall have attended a complete course of all the lectures delivered in an incorporated medical college in this state, or elsewhere, one year shall be deducted.

Sec. 10. The physician and surgeon with whom a student shall commence his studies, shall file a certificate with the president of the county medical society to which he belongs, certifying that such person has so

commenced his studies; and the term of study shall be considered as commencing on the day on which such certificate is filed.

Sec. 11. If the term of study shall be intended to be for less than four years, upon either of the grounds mentioned in the ninth section of this Title, the president, with whom the certificates shall be filed, upon satisfactory proof that a deduction ought to be allowed, shall annex to such certificate, an order specifying the period, not exceeding one year, which, according to the proof exhibited to him, ought to be deducted from the term of four years, and directing that the term of study of the student shall be for the period that shall remain.

Sec. 12. No person shall receive from the regents of the university a diploma, conferring the degree of doctor of medicine, unless he shall have pursued the study of medical science for at least three years, after the age of sixteen, with some physician and surgeon, duly authorized by law to practise his profession, and shall also after the same age, have attended two complete courses of all the lectures delivered in an incorporated medical college, and have attended the last of such courses in the college by which he shall be recommended for his degree.

Sec. 13. No student shall be admitted to an examination by any county medical society, except of the county in which he shall have pursued his medical studies for four months immediately preceding his examination; but if the student during that period, shall have attended the lectures in either of the incorporated medical colleges of this state, he may be examined and licensed, either by the medical society of the county in which such college is situated, or by that of the county in which he shall have resided, previous to such attendance.

Sec. 14. No person who shall have been examined by the censors of any county medical society, as a candidate for the practice of physic and surgery, of either of them, and shall have been rejected on such examination, shall be admitted to an examination before the censors of any other county medical society; but such person may appeal from the decision of the censors by whom he shall have been examined, to the medical society of the state.

Sec. 15. No person who, either upon an original examination or upon an appeal, shall have been rejected by the censors of the state medical society, shall thereafter be admitted to an examination before the censors of any county medical society.

Sec. 16. No person shall practise physic or surgery, unless be shall have received a license or diploma for that purpose, from one of the incorporated medical societies in this state, or the degree of doctor of medicine from the regents of the university; or shall have been duly authorized to practise by the laws of some other state or country, and have a diploma from some incorporated college of medicine, or legally incorporated medical society, in such state or county.

Sec. 17. No person coming from another state or country, shall practise physic or surgery in this state, until he shall have filed a copy of his diploma with the clerk of the county where he resides, and until he shall have exhibited to the medical society of that county, satisfactory evidence that he has regularly studied physic and surgery, according to the requisitions of the ninth section of this Title.

Sec. 18. No diploma, granted by any authority out of this state, to an individual who shall have pursued his studies in any medical school within this state, not incorporated and organized under its laws, shall confer on such individual, the right of practising physic or surgery within this state.

Sec. 19. Every person licensed to practise physic or surgery, or both, shall deposit a copy of such license with the clerk of the county where he resides, who shall file the same in his office; and until such license is so deposited, such person shall be liable to all the penalties provided by law, in the same manner as if he had no license.

Sec. 20. No person under the age of 21 years shall be admitted to practise physic or surgery in this state.

Sec. 21. The degree of doctor of medicine conferred by any college in this state, shall not be a license to practise physic or surgery; nor shall any college have, or institute a medical faculty, to teach the science of medicine, in any other place than where the charter locates the college.

Sec. 22. Every person not authorized by law, who for any fee or reward shall practise physic or surgery within this state, shall be incapable of recovering by suit, any debt arising from such practice, and shall be deemed guilty of a misdemeanor, punishable by fine or imprisonment, or both, in the discretion of the court by which he shall be convicted.

## TO READERS AND CORRESPONDENTS.

1. Our next number will contain communications from Professors JOHN AUGUSTINE SMITH, T. R. BECK, Drs. LUDLOW, LEE, &c. &c.

2. Dr. PEIXOTTO's Essay on the Hooping Cough, to which the prize was awarded by the State Medical Society of New-York, and the publication of which has been, hitherto, unavoidably delayed, will be published in the course of the ensuing month.

3. *University of the State of New-York.*—The number of Students attending the College of Physicians and Surgeons in this city, during the present session, is *one hundred and fourteen;* and of those attending the College in the Western District, *one hundred and seventy-one*, making in all, a class of nearly 300 Students attending the medical department of the University.

4. With much pleasure we have seen the prospectus of a Journal about to be published, in this city, in the French language. Its title is, the "Journal des Sciences Naturelles de L'Amerique du Nord," and its plan is of the most comprehensive character, embracing not merely all the departments of medicine, but the whole circle of the natural sciences. The Editor is, Dr. XAVIER TESSIER, already distinguished as the former editor of the "Journal of Medicine of Quebec."

5. The press of matter in the present number has excluded several articles, which shall appear in our next.

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*No. XXV. will be published on the last day of March.*

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